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18th ANNUAL REPORT

OF THE

Bureau of Mines and Mine Inspection

OF THE

STATE OF MISSOURI

EMBRACING REPORTS ON

LEAD, ZINC, COAL AND OTHER MINES

YEAR ENDING DECEMBER 31, 1904



**THE HUGH STEPHENS PRINTING COMPANY,
JEFFERSON CITY, MO.**





LETTER OF TRANSMITTAL.

Jefferson City, Mo., October 2, 1905.

Hon. Joseph W. Folk, Governor of Missouri:

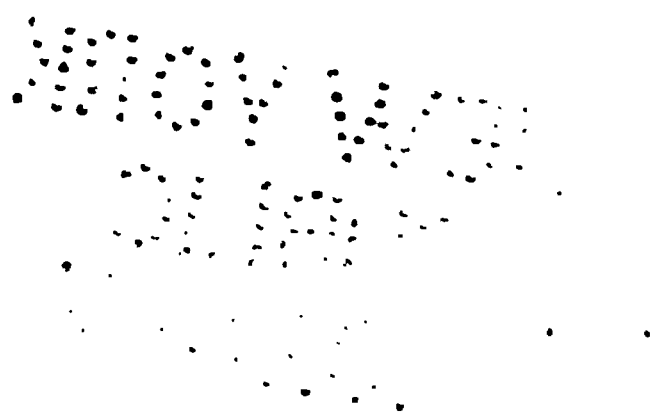
Sir—In accordance with the requirements of law, I have the honor to submit the Eighteenth Annual Report of the Bureau of Mines, embracing a report on the zinc, lead, coal and other mines of the State.

This duty devolves upon me by reason of the fact that of the four Inspectors now in the employ of the State, the writer alone served during the year 1904. It is also a duty and pleasure to call attention to the difficult task performed by Mr. J. W. Marsteller, Secretary of the Bureau. Aside from the work of my district (the Eastern) he wrote and compiled the entire report, and considering the fact that he had not a line relative to inspection or the condition of a single mine in the other districts, but secured his data from such reports as the operators furnished, and that which he gathered by his untiring personal efforts, in my judgment, entitles him to much praise.

Respectfully,

GEO. K. WILLIAMS,

Inspector Eastern District.



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REPORT.

The mining industries of the State for the year 1904 have experienced a most prosperous and satisfactory period, generally, excepting in the matter of coal production; this, however, was about offset in securing the coal output of Platte county, which had gone to the credit of Kansas. (See explanation under the head of coal.)

Zinc ore shows a most gratifying result, both in tonnage and values. The product for the year was 476,786,000 pounds, of which amount there is included 43,202,000 pounds of silicate and carbonates. The increase over the largest previous production amounting to 55,568,000 pounds, or 10.32 per cent. The increase in the value of the ore was more pronounced, however, amounting to \$1,464,960.00, or 21.59 per cent., the total value of the product amounting to \$8,255,174.00.

The average price received for all grades of zinc ore was \$36.33 per ton, while the silicates and carbonates averaged \$17.50 per ton. The prices received for the ore during the year fluctuated between \$36.00 at the beginning to \$53.00 at its close for the high grade ores. The highest prices received during the first quarter of the year for high grade ore was \$40.00, for the second quarter \$39.50, for the third quarter \$40.00, and the last quarter \$53.00 per ton.

The prices received for ore sold on the 60 per cent. assay basis ranged for the first quarter between \$32.25 and \$36.12, for the second quarter \$32.70 and \$35.00, the third quarter \$34.90 and \$37.00, and for the last quarter between \$42.00 and \$45.50 per ton.

The Joplin or Western District, confined to Missouri territory only, leads all other sections, as well as the Nation, in its production of zinc ore; its output amounting to 464,790,000 pounds, as against 11,996,000 pounds for the remainder of the State. Jasper county, the principal producer of the Western District, mined 91 per cent. of the zinc ore produced in the entire district, with \$8,869,607.00 to her credit for its and lead production in 1904.

The demand for zinc ore is greater than ever before known, while this assists in the maintenance of good prices, still there ap-

to be less effort required in keeping up the price than heretofore experienced by operators.

The future of this ore in this district is brilliant with the promise of still greater results than those thus far obtained.

Lead ores show a product of 270,052,000 pounds, of which the Eastern District produced 77.60 per cent., or 207,364,000 pounds; the increase in output over the previous year being 12,452,000 pounds. St. Francois county, the chief producer in the Eastern District, although having to her credit a production equal to 86.32 per cent. of the entire output of the district, suffered by comparison with the former year. This was due to the closing of three large producing mines on account of strikes. The current year will likely find the county exceeding all former productions. The total value of the lead ore in the State amounted to \$6,451,418. This value, it occurs to us, should be at least \$268,000 in excess of the above figures, basing the prices upon all former experience between the Eastern and Western Districts. Heretofore the difference between the Eastern and Western Districts in the value of lead ore produced has never differed to exceed \$7.00 per ton; but this year the Eastern District estimates its ore at a value of \$10.80 below that of the Western District. All know that the price of lead ore was higher in 1904 than it was in 1903, and yet the Eastern District operators estimate it on an average of \$1.62 per ton less than they did in 1903. The lead prices in the Joplin District averaged \$3.00 more per ton than they did in 1903, and these prices were based upon the actual sales made from week to week. In the Eastern District many of the operating companies either own or are interested in smelters and hence they estimate the value of the ore too frequently, we fear, in an indifferent manner.

Lead ore is in great demand and prices higher than they have been since the war between the states. This ore, like our zinc ore, is the purest and best on the market, and each will be in demand while either of the ores are needed. Increased demand is being met by an increase of mines, increased capacity in our concentrating plants and improved facilities in mining and handling the ores. Lead ore has as bright a future in this State, and fortunately we have the territory to draw the Nature's bank in this State is exceedingly strong, and good may be expected as long as there is business doing in any part of the State, our ores being preferred above all others.

The coal industry suffered this last year in point of tonnage as in 1903; but this was general in the coal mining states of the West. This was not due to local conditions of trade, as business was generally good. From the most reliable sources we gather the con-

clusion that the falling off in the bituminous coal trade of the country at large was due to the great strike in the Anthracite regions, which seems to have stimulated the bituminous coal trade beyond normal conditions all over the country. This had the effect of increasing the bituminous output of 1903 beyond the usual or expected demand. Then again large supplies of coal were provided for by railroads and large manufacturing concerns in fear of the annual meeting between operators and miners, at which it was thought the miners would demand a higher price for mining. This stocking up of coal naturally weakened the demand for 1904 coal. Fortunately, our coal output for 1904 is but little short of its best, owing to the energetic efforts of our present Chief Coal Mine Inspector, in securing an output of coal from Platte county, which had been extracted from Missouri, hauled at a level of 716 feet below the Missouri river and hoisted out through shafts on the Kansas side of the river, swelling thereby the output of that state. This output we have secured, however, and our production for the year foots up a total of 4,241,912 tons, which sold at the mines for \$7,003,078.00, an increase of \$272,563.00 over any previous value received for the coal product of the State in any one year.

Cobalt (see article on same), the product of which shows a value of \$89,708.00, was mined exclusively in Madison county.

Nickel was mined in same county as cobalt, and valued at \$25,382.00.

Copper ore was mined in Madison and Crawford counties, the same having a value of \$6,895.00. (See article under head of Copper.)

Iron ore was mined in fourteen counties, but in Crawford county chiefly, and shows a value of \$194,525.00.

Baryta, or tiff, as it is sometimes called locally, was mined and sold for \$176,472.00.

Tripoli—This mineral, hereinafter described, is mined more extensively in this State than elsewhere in this country. Newton county produced it only, the output being sold for \$38,000.

Kaolin was mined in Miller and Morgan counties, having a product which sold for \$2,577.00.

The commodities above mentioned are valued at \$22,243,048.00, which is equal to one-fourth the value of all gold mined in the United States during the year 1904.

We should add the value of our marble, granite, building stone, cement and lime rock and clays, valued at \$4,218,426. This gives a total value for the products from our mines and quarries of \$26,461,474.00.

Clays of this State are varied, of a superior quality and are mined more extensively than heretofore. The Inspectors are giving

much attention the current year, and we hope to secure such detailed information as will be of service to all interested in them.

There were employed at our coal mines during the summer season 8,868 men, and in the winter season 10,881, or an average of 9,874 employes.

In the lead and zinc mines, including the mills, there were 13,608 employes. In the Eastern District 4,656, and in the Western District 8,952, or a total of 23,482 miners and other help at our mines.

Accidents in our mines were as follows:

	Fatal.	Non-fatal.
Lead and zinc mines, Eastern District.....	6	
Lead and zinc mines, Western District.....	23	8
Coal mines	11	16
Total.....	40	24

There is no data for making comparisons with other states in the matter of accidents in lead and zinc mines, but with coal there is, and no mining state in our country shows a better record than Missouri.

The percentage of fatal accidents in our coal mines for each 1,000 men employed is less than one per cent., it being .90.

There was one fatal accident for every 897 men employed, and out of every 385,628 tons of coal mined there was one fatal accident.

EASTERN LEAD AND ZINC DISTRICT.

GEORGE K. WILLIAMS, Inspector.



EASTERN DISTRICT.

In this district are embraced the following counties:

Butler, Camden, Carter, Cole, Crawford, Dent, Franklin, Gasconade, Howell, Iron, Jefferson, Madison, Miller, Moniteau, Morgan, Oregon, Osage, Ozark, Phelps, Ripley, St. Francois, Shannon, Washington, Webster and Wright.

The area embraced within the limits of the 25 counties mentioned amounts to 15,842 square miles, from which there is mined the following minerals:

Cobalt, nickel, copper, lead, zinc, iron ore, baryta, and a great variety of very valuable clays, marble, granite, cement rock, lime rock and building stone.

This district is pre-eminently the lead-producing section of the State, it having produced during the year 77 per cent. of all the lead produced in Missouri. One county (St. Francois) having to her credit a production of 178,708,000 pounds of lead ore, or 86.18 per cent of the entire output of the district. The counties contributing to the lead output are as follows: In the order of their production—St. Francois, Madison, Washington, Franklin, Jefferson, Morgan, Moniteau, Cole, Camden, Wright, Webster and Crawford.

Zinc ores in this district, with the exception of Moniteau and Morgan counties, are confined to the carbonates and silicates. Howell, Jefferson, Ozark, Oregon and Washington counties produce the latter, and, strange to state, Moniteau has the reputation of producing the purest zinc blende to be found in the State; unfortunately, however, the output is quite small.

Copper ores are mined in this district in small quantity, still there is a fair promise of quite an increase in the current year's product. There is an encouraging prospect of an increased product from Crawford county, and also from Madison county, to which counties the year's output is due. (See remarks on copper.)

Cobalt and nickel are produced in greater quantity in this district than in all other sections of the country combined. Madison county thus far is the only county producing these ores, and it promises by the

opening up of several new mines an increased output during the current year.

Iron ore during the year was much more in demand than for several years, with an output in the district of 73,432 tons. The product was largely from Crawford county (70 per cent.), with St. Francois, Howell, Butler, Shannon, Phelps, Ripley, Carter, Franklin, Iron, Osage and Gasconade following in the order of production. All things point to a largely increased production for the current year.

Baryta was produced in 1904 in greater quantity than heretofore experienced in the State. The district, embracing Camden, Cole, Crawford, Franklin, Jefferson, Miller, Moniteau, St. Francois and Washington counties, mined the entire output, with the exception of Benton county, where a few tons were mined. Washington county has a decided lead in the production of baryta.

There are 373,178 acres of land controlled and owned by the respective mining companies of the district, and the capitalization of these mining concerns amounts to \$30,378,625. The number of men employed in and about the mines, 4,656; the shafts operated number 104, ranging in depth from 20 to 527 feet. The production from the district for 1904, is as follows:

207,310,000 pounds of lead ore, valued at.....	\$4,729,573 00
606,000 pounds of zinc ore valued at.....	11,106 00
11,390,000 pounds carbonates and silicates, value.....	68,317 00
Copper ores valued at	6,895 00
Nickel ore valued at	25,382 00
Cobalt ore valued at.....	89,708 00
146,864,000 pounds of iron ore valued at.....	180,565 00
84,628,000 pounds of baryta valued at.....	175,594 00
660,000 pounds of kaolin, valued at.....	2,385 00
Total	\$5,289,525 00
Add value of the several clays, marble, granite, cement and lime-rocks and building stone	3,127,682 00
Total for the district.....	\$8,417,207 00

Many of the counties named in the above list have had very little prospect work done thus far and their possibilities have yet to be developed. With the list of minerals here shown to exist in this district, it looks like the prospector had been shown a wide field for operations. Iron ore is known to exist in quantity in many counties embraced within the limits of this district, aside from those mentioned, while asbestos, growing so rapidly in use, may be found here also, we know of its existence, but comparatively nothing as to quantity or quality.

COPPER.

The production of copper ore in Missouri has been the result of very limited effort, and the operations confined to a few counties. For over sixty years the presence of copper has been noted in sixteen counties of the State in such form and quantity in surface indications as to invite prospecting and development, but outside of Madison, Shannon, Washington, Crawford and Ste. Genevieve counties very little indeed has been done to demonstrate the presence of the mineral or the possibility of its profitable production.

The history of the small efforts at copper mining dates back to 1837, and beyond that date for over a century have come down traditions and legendary stories regarding rich copper mines and their wonderful production current among the explorers and early pioneers of the Mississippi valley. Some of these stories are very romantic, narrating the hiding of copper mines and hard-fought litigation in the courts over the ownership of land after the Government survey had staked out the boundary lines of the sections and their subdivisions.

Small hand specimens of copper ore have been found in many counties of the Ozark uplift, but the zone of copper occurrence, which offers the most encouraging hope for the interested prospector, embraces the counties named, with possibly some of their immediate contiguous territory. The production of the ore has so largely come from these counties that it is very likely that the future history of the copper industry of the State will be closely associated with the district already referred to.

For a detailed description of copper production in Crawford county, the reader is referred to the annual report of the Bureau of Mines of Missouri for the year 1903, written by the Secretary.

The following description for the year 1904, is from Bulletin No. 267, issued by the United States Geological Survey on the copper deposits of Missouri, the field work having been done by H. Foster Bain and E. O. Ulrich:

THE SULLIVAN MINE.

History.—On the northeast flank of the Ozark uplift, in Franklin, Crawford, Phelps and adjacent counties, copper minerals have been found at a number of points, and several attempts have been made to develop mines. Recently some prospecting has been carried on near St. James, Phelps county, and the Missouri Copper Mountain Mining Company has put in operation a 20-ton furnace near Sullivan, on the Frisco system. This

corporation, composed largely of persons living at Sedalia, Mo., owns nearly 7,500 acres of land in Washington and Crawford counties. Development has been under way for nearly three years, an attempt having first been made to concentrate and ship the ores and later a furnace having been built and put in operation. The works are located in sec. 24, T. 40 N., R. 2 W., in Crawford county. They are at the old Sullivan and Bridell mine, where the Hamilton Iron Company, up to 1873, took out specular iron ore.

Geology.—The area in which the copper has been found is that known in the older geologic reports as the region of the "Second sandstone." Nason used "Roubidoux sandstone" to designate the surface rock of the district, and applied Gasconade limestone* to the heavy limestone beds found in the lower portions of the valleys. The ore is found in residual clays, filling pits in the Gasconade limestone and near the outcropping edge of the overlying Roubidoux.

The copper occurs in connection with or near to the specular iron-ore deposits which characterize the district. These iron deposits have been described by Nason,* who considered them to represent concentrations made by surface waters in sink holes. He noted the common association with the hematite of sulphides of iron, copper, lead, zinc, and arsenic, and the fact that these sulphides occur most abundantly at the bottom of the deposits. Indeed, he considered the iron to have been originally concentrated as a sulphide, and to have been later altered to hematite. This theory of the origin of the ores would make them strikingly analogous to the iron cappings, or gossan, over mixed sulphide ore bodies, such as occur in the western states.

The main workings are below these shafts, the entrance being by adit connected with one of them. The adit is cut through a bar of limestone, beyond which is a body of soft red clay, in which the copper occurs. Both chalcopryite and the usual alteration products occur, irregularly distributed through the clay. Balls of the chalcopryite a half foot or more in diameter and coated with malachite and chalcocite are found. Not enough work has yet been done to develop the form of the ore body, but it is known to be somewhat irregular. Both lead and zinc ores occur on the same land, though neither were seen in the copper workings.

It would seem that the copper occurs in a residual clay occupying an irregular pit in the limestone of the hillside. It is above water level and below the main body of iron ore. It was originally in the form of a sulphide, and the present ore has resulted in part from concentration in situ by residual action. Probably also copper has been leached out of the higher portion of the hill, the iron being left behind as a gossan. Accompanying this action there has been at least local silification of the limestone. The original introduction of the sulphides was by waters, which were of different composition, since for a long time the waters of the region have been destroying rather than building up the sulphides. The nature and source of these waters are for the present uncertain. So far as known, the original sulphides are not sufficiently rich to be worked alone for copper, and only the pockets found in the coves of residual reconcentration warrant prospecting.

Value of the deposits.—No general sampling of the mine was attempted. An average sample of the face of one drift, as nearly as it could be taken, was found, on assay in the Survey laboratory by George Steiger, to carry 12.55 per cent of copper. It is impossible to say what the average of the

*Nason, F. L., *Report on iron ores: Missouri Geol. vol. 2, 1892, p. 114.*

whole ore body would run. It is estimated by H. H. Graham, manager of the property, that the ore going to the furnace runs 5 to 8 per cent. From a twenty-day run in 1904 30,000 pounds of pig copper and matte resulted. This is equivalent to 22,500 pounds of metallic copper. According to the records of W. H. H. Myers, secretary of the company, the ore used in the furnace during this run averaged 14 per cent. The ore is practically self-fluxing and easily and cheaply handled. So long as no greater difficulties than those now apparent arise, it should be possible to work this ore profitably. In view, however, of the very great irregularities in form and richness characteristic of residual ores, it is impossible to make any valid estimates for the future.

THE STE. GENEVIEVE MINES.

History.—The Ste. Genevieve copper deposits have been described by Frank L. Nicholson.* According to him they were first noted in 1863, though the presence of copper in small amounts seems to have been recognized earlier at the Crow lead mines. Exploration began as early as 1868, the original discovery being followed by the opening in 1876 of the Chicago and Swansea mines and in 1879 of the Herzog. At the time of Nicholson's description the two last named were idle, while the originally discovered mine and the Chicago were being operated under the name of Cornwall mines. At present none of the properties are working.

There are no data available for a complete estimate of the production, but in the tenth census* these mines are credited with an output for the census year of 230,717 pounds, valued at \$25,730. As they were operated more or less actively for nearly a quarter of a century, their aggregate production presumably has been considerable.

Geology.—The copper mines are situated about 8 miles southwest of the town of Ste. Genevieve, in sections 15, 16, 21, and 22 of T 37 N, R. 8 W, along a small stream tributary to the Aux Vases river. The ore occurs principally at two horizons 125 feet apart, in the lower part of the Jefferson City limestone. The country rock is a coarse magnesian limestone with numerous flint nodules. These are ordinarily from 2 to 4 inches in diameter, and are arranged in horizontal bands along bedding planes. They are the clear white to blue flints, such as are common in the Mississippi valley, and do not show the druses which characterize the flints of the Gasconade formation. Certain thin and irregular sandstones are interbedded with the limestone. A very hard, quartzose bed, about 2 feet thick, occurs 15 to 20 feet beneath the main ore body at the Cornwall mines.

Faulting of some magnitude occurs in the region, and there is some evidence of faulting near, but not at the mines. The beds are practically horizontal, though there is a slight dip toward the northeast. In the general region there are outcrops of underlying pre-Cambrian crystalline rocks, though none of these are known at the mines. No other igneous rocks are found in the area. Topographically the region is a dissected plateau of some roughness.

Ore bodies.—At the Cornwall mines the ore occurs, as stated, at two horizons, of which the upper has been mainly worked. A third horizon still higher in the hill and, so far as known, not economically important, is reported by Dr. E. D. Peters. Both horizons worked are above local water

*Nicholson, F. L. Review of the Ste. Genevieve copper deposits: Trans. Inst. Min. Eng., vol. 10, 1882, pp. 444-456.

*Tenth Census, vol. 15, p. 798.

level. Workings in the lower bed are mainly closed, and the upper only was especially investigated. The workings extend along the edge of a horizontal bedded breccia completely around the head of the small valley in which the furnace is located. Drifts have been run into the hill at intervals, and room-and-pillar workings opened—much like those of a coal mine. No map of the workings is available for reproduction; but there are a good many hundred feet of drifts now open, and a number of excellent faces of ore may be seen.

The ore bed is from 18 inches to 3 feet thick in most parts of the mine. It seems to be thickest at the intersection of the breccia and certain small vertical fractures, along which chimneys of ore are formed, extending upward as much as 16 feet above the usual base. The ore also goes down at such intersections, but seemingly not to any important extent. It consists now of breccia of white flint, cemented mainly by chalcopyrite, but with malachite, azurite, limonite, and calcite present. Galena is reported to occur occasionally in small druses, but was not seen. Cuprite, chalcocite, tenorite, etc., occur in subordinate amounts. The cap rock and the floor of the workings consist of ordinary magnesian limestone.

An examination of the freshest specimens of the ore brings out the following details: The chalcopyrite, now very finely brecciated and in part cemented by "brown copper," is itself the matrix for fragments of white chert. This chert exists now in two forms, (1) a clear, fresh, almost glassy material, similar to the usual chert of the surrounding country, and (2) an earthy granular material known to the miners as "chalk." A microscopic examination of the latter by Mr. Lindgren shows that it is composed mainly of finely divided quartz, with some sericite. This confirms the impression, based on macroscopic examination, that it represents an alteration form of ordinary chert in which a portion of the silica has been removed by solution. *Pari passu* with this change has occurred the substitution of copper carbonate, and even in a single hand specimen all stages of the process can be observed, from the introduction of malachite along the cracks and the clouding of the clear chert to the complete substitution of the bright-green mineral for the sharp-angled white fragments. At the same time the brassy yellow chalcopyrite has been finely broken up and altered to the somewhat indefinite mixture known as "brown copper." It would seem, therefore, that the formation of malachite and other oxidation products marks a recent change, characterized by tendency toward replacement of the silica. The introduction of the sulphides was evidently earlier and apparently the work of waters having other sources, since they were of such composition as to leave the chert unattacked even in small sharp-angled fragments. Presumably these sulphides replaced the dolomite in which the chert was originally bedded or were deposited in the interstices of the breccia, but as to this and the origin of the chert itself there are at present no certain data.

In the lower horizon the Revere tunnel, now partly closed, shows copper pyrites disseminated through a bed of coarse granular dolomite. There does not seem to be here any chert breccia, though the ore appears to be bedded. So small a portion of the work is open, however, that no very certain conclusions can be drawn. The bed is said to be rich, but of small extent.

Value of the deposits.—No attempt was made to sample the mine. Considerable ore is said to have been shipped, running 20 to 27 per cent in copper, and the old dump is estimated to contain 5 per cent of metal. A 16 per cent grade is said to have been commonly produced. These claims,

in the light of the appearance of the ore in the mine, do not seem extravagant. Faces of workable ore are certainly now open.

Drilling by Mr. Doak, a former owner, is reported to have shown three additional copper horizons at lower depths, and also to have shown something as to the extent of the ore body into the hill. The records of this drilling are not at hand. Dr. E. D. Peters states that 8 to 10 churn-drill holes put down under his direction several hundred feet apart and covering an area extending 1,800 feet eastward from the present workings all showed copper at the horizon of the main chert breccia. In the case of flat-lying, bedded deposits near the surface drilling is a very effective and cheap method of proving the extent of an ore body. The method is especially well suited to these deposits.

At the time the mine was working no railway was near enough to be of service, and all freight had to be hauled by wagon approximately 10 miles from the steamboat landing above Ste. Genevieve. Recently the Illinois Southern Railway has been built within $2\frac{1}{2}$ miles of the mine. This line affords a direct and short route to the Illinois coal fields and materially affects the working conditions. It is quite probable that well-considered effort would result in a small, but profitable, copper industry.

SHANNON COUNTY MINES.

Location.—In Shannon county there are showings of copper, and attempts have been made to mine at eight localities. The largest amount of development work has been done at Slater and so-called Jerktail properties. None of the prospects are now being developed. They are all within a few miles of Eminence, the county seat. Eminence is connected by daily stage with Winona, on the Current River division of the Frisco system. * * *

Bibliography.—The literature relating to the field is very limited. Below is an abstract of the important papers:

[Hodge, Jas. T., Wisconsin and Missouri lead region: Am. Jour. Sci., 1st ser., vol. 43, 1842, pp. 65-72.]

Deposits found along contact of a red porphyry with a limestone. No regular contact. Fissures between the two rocks filled with iron ore, copper ore, clay, and gossan. Little veins of copper ore in limestone. Ores are malachite, cuprite (?), and chalcopyrite. The "rotten vein" between the two rocks is a breccia of both with particles of malachite scattered through it. Ore is mined at three localities. In one the ore is more sulphide than carbonate, and the latter is partly azurite.

[Whitney, J. D., *Metallic Wealth of the United States*, 1854, p. 311.]

No mining worthy of name. Deposits on contact between Lower Silurian limestone and Archean quartz-porphyry. Not likely to be profitable.

[Report of the Current River Mining Company, accompanying charter and by-laws of the Current River Mining Company of Missouri, by Stephen Bawden, mine agent, New York, 1854.]

The vein is of promising character, being composed of "gossan spar" and sulphuret of copper, green carbonates and malachites. The lode is embedded in red granite or porphyry. The mine has a regular or true vein with a dip of $1\frac{1}{2}$ feet to the fathom, running northeast-southwest. There probably other parallel veins.

[Broadhead, G. C., *Rept. Missouri Geol. Survey*, 1873-74, chap. 5, p. 48.]

No copper mining now done. Mining formerly carried on in five counties. Copper ore noted in twelve others. Ores are azurite, malachite and chalcopyrite.

[Nason, F. L., Report on iron ores: Missouri Geol. Survey, vol. 2, 1892, p. 95.]

Chalcopyrite mined to some extent near Eminence, in Shannon county. Exact locality not reported.

[Winslow, A., Geology and mineral products of Missouri: Missouri at the World's Fair (at Chicago) 1893.]

The principal occurrences of such (copper) ore are in Ste. Genevieve, Shannon and Franklin counties. Found in magnesian limestones of Cambrian age.

[Haworth, Erasmus, Crystalline rocks of Missouri: Missouri Geol. Survey, vol. 3, 1894, p. 207.]

The porphyry in Shannon county is very similar to that northeast. Portions are the ordinary red kind. Other portions are filled with the light-gray or light-green feldspar phenocrysts, which are common to the northeast.

Slater Mine.—The Slater mine is about 2 miles east of Eminence, at a point where one of the common porphyry ridges of the district projects through the Gasconade or Cambro-Ordovician dolomites. The particular knoll, on the east versant of which the copper occurs, is one of a chain extending for several miles in a northwest-southeast course. The porphyry is the usual red type so common in southeastern Missouri. It is of pre-Cambrian age. Separated from it by a marked unconformity are the gently dipping granular dolomites of the Gasconade formation. The cherty dolomites and sandstones of the Roubidoux formation occur in the higher hills surrounding the exposure.

The contact between the porphyry and the limestone is in an irregular plane, dipping at a low angle to the east. It is occupied by a well-developed conglomerate in which there are boulders and pebbles of porphyry in a matrix of coarse crystalline dolomite. This conglomerate is not now exposed in its full thickness, but old workings are said to have shown a total of 12 feet. At the particular point at which the copper is found the surface of the porphyry dips down, forming a shallow basin or cove, in which the conglomerate was laid down.

Copper in the form of chalcopyrite (CuFeS_2) and the green carbonate, malachite (CuOH^2CO^3), occurs in the matrix of this conglomerate. The chalcopyrite forms small, irregular crystals and grains varying in diameter from 1 millimeter to a half inch. They occur with rhombohedral crystals of dolomite of nearly uniform size and grains of quartz in a paste of greenish clay. The carbonate is found in similar disseminated grains, apparently the altered remnants of chalcopyrite, and also in flecks and thin seams penetrating and replacing the porphyry fragments. At the surface, where the rock has been exposed, the cracks and crevices contain a black, sooty powder, apparently mainly manganese oxide, bearing copper probably in the form of the oxide or of chalcocite (Cu_2S). An assay of this material in the Survey laboratory, by George Steiger, gave 6.44 per cent copper.

The largest amount of work done on the property has evidently been in the stripping and mining of this conglomerate over some three acres. To the east, where the rock dips under cover, it has not been followed. Along the strike less prominent copper showings are said to occur at intervals for nearly two miles.

Copper also occurs in the porphyry, and several shafts have been sunk, following small veins into this rock. One of these shafts is reported to be 160 feet deep. This was filled with water at the time the property was examined. The rock on the dump showed thin seams in the porphyry, and in these small crystals of quartz, dolomite and chalcopryite occur. In no specimen seen was the amount of the latter sufficient to make the rock workable. In other pits not so deep, similar crevices in the porphyry were seen filled with the green carbonate. This occurred at one place as much as 4 inches thick and practically free from admixture with other minerals. All the crevices examined were small, an inch or two in width at most, and all have a general northwest-southeast course, parallel to the general trend of the porphyry hill. They are not larger, more numerous, or, except for their content of copper, more impressive than at many other points in the porphyry of the region. Several of the earlier observers have mentioned "true fissure veins" as occurring in the porphyry, but so far as observations of the present writers go, these minor crevices are the only foundation for such statements.

The prospective value of the property is so intimately connected with the probable genesis of the ores that it is necessary to consider at least the possible character of the latter.

The chalcopryite is not apparently present in quantities of economic importance; the question of the origin of the sulphides is therefore relatively important. It is believed that they were derived from the porphyry by leaching either (1) of minutely disseminated quantities of copper, known to be present in the rock, or (2) of small veins locally present, of which the ores now exposed are representatives. This is believed to have occurred at the time the conglomerate was formed, though it is quite possible that the process continued in operation through later geologic ages.

The carbonates, oxides, and possible chalcocite present are alteration products from the sulphides, and the topographic and structural features of the deposits indicate clearly that this alteration has been accompanied by at least some concentration. The open, porous conglomerate affords abundant opportunity for the circulation of waters, while the decomposition of the lime-soda feldspars of the porphyry fragments would serve to precipitate as carbonate any copper sulphate present. It is notable that the decomposed porphyry pebbles and the carbonate are closely associated. In any such process the carbonates would be carried down, more or less, and precipitated in the upper fissured part of the porphyry below, and this is believed to have been the origin of the carbonate found in that situation.

It follows from the above considerations that future prospecting should be directed toward finding extensions of the conglomerate and points of local enrichment rather than toward following the small veins into the underlying porphyry. The cove in which the deposits occur opens out to the east, in which direction also the rocks dip. A series of drill holes parallel to the outcropping edge of the conglomerate should determine the depth and extent of mineralization very cheaply.

Jerktail Mine.—This is one of the older and better-known prospects. It is said to have been worked about 1840 and again in 1870, and shipments have been made from the property. There has been some recent prospecting. There are several shallow shafts and one drift. The conditions are very similar to those at the Slater mine. The Gasconade limestone rests on the porphyry with gently sloping contact, and the usual conglomerate is present. In this conglomerate both chalcopryite and malachite occur, a

there has evidently been some reconcentration of material. There is the same pre-Cambrian erosion basin or cove, in this case fronting to the southwest rather than east, and the geologic and topographic features of the two localities are almost identical. One exception is that present exposures at least do not show small veins running down into the porphyry, as observed at the Slater mine. There are no sufficient data for estimating the probable size and value of the deposit.

Sutton Mine.—This property, five miles southeast of Eminence, resembles the Slater and Jerktail, in that copper carbonate is found in the base of the limestone at the contact with the underlying porphyry. There are no recent openings, and the details of the occurrence are not so well displayed as at the other mines mentioned, but the phenomena seem to be essentially the same.

Casey Mine.—About two miles north of Eminence, in a saddle between high flint-capped hills, copper has been found in the limestone and away from any immediate contact with porphyry. The horizon is in either the basal portion of the Roubidoux or near the top of the Gasconade limestone, and is thus considerably above that of the copper at the Slater mine. The country rock is a coarse, granular dolomite, in which is a bed of shale 4 to 12 inches in thickness. In this shale, and at points completely replacing it, is copper, mainly in the form of malachite, but also occurring as chalcocite. The bed has been followed into the hill by means of an adit some 50 feet. A few years ago the property came into the hands of certain Pittsburg people, who abandoned the drift and began sinking. It is said that they have discovered a second, but seemingly less extensive, copper horizon below the ore worked in the drift.

The rocks are horizontal, bedded limestones, with no signs of faulting or of vein phenomena. There are no outcrops of porphyry in the immediate vicinity. The origin of the copper is somewhat more difficult of explanation than at the Slater mine. It can only be said that copper-bearing solutions have evidently circulated somewhat extensively through the rocks of the region, and that the shale band has afforded a favorable horizon for its lodgment, either by direct reduction through the action of organic matter or by the mechanical process recently described as absorption.

The extent of the deposits is unknown, owing to the way the prospecting has been carried on. They do not seem likely to be large.

Tyrell Mine.—At this property, which was visited by Mr. Ellis, the copper occurs in the form of chalcocite and malachite in a brecciated dolomite, resembling in hand specimens some of the material found at Ste. Genevieve. So far, however, flats have not been developed, all the ore mined having come from a small vertical seam running northwest-southeast. This has been followed down 48 feet, and is said to have shown some copper the whole distance. The slope above the prospect is covered with chert and sandstone, probably betokening the presence of the Roubidoux, so that the horizon is probably about the same as at the Casey mine.

Bonanza Prospect.—Situated about six miles east of Eminence, this is stanced as typical of a number of small prospects scattered throughout the county. Not far from a porphyry outcrop, but in the limestone fill above a few small pits have been sunk. Apparently they merely reached the solid rock. No copper minerals of any kind are now shown on the dumps. Mineral in small flakes, probably chlorite, has apparently been seen. Malachite.

At the porphyry at the foot of the hill are some thin streaks of white

quartz, and at the contact of the porphyry and the limestone a black earthy material is found in small quantity. This not improbably contains some chalcocite, since it is said to show on assay 4 per cent of copper and 1 ounce of silver per ton.

Freeman Prospect.—This is very similar to the Bonanza. Copper carbonate and galena are said to have been found in small quantity in shallow pits in the limestone. At present nothing but ordinary limonite and residual clay are exposed.

General Conclusions.—From the descriptions already given of the individual prospects it will be evident that there is small probability of true vein deposits of value being found in the porphyry. The largest amounts of copper are in the limestone, and of the two horizons recognized the lower is the more favorable. Along this, where the structural and topographic conditions have been favorable, copper occurs in the conglomerate. The deposits are thus essentially blanket veins, and in view of their shallow dip they may be most easily prospected by drilling and test pitting. Such ore as occurs is of a nature to be easily reduced, and the samples seen are evidently of good grade. The size of the ore bodies can be determined only by additional prospecting.

MINE LA MOTTE.

This famous property includes some of the oldest mines in the United States, and up to 1893 Mr. Winslow estimates that it had produced approximately \$10,000,000 worth of lead alone. In addition, copper, nickel and cobalt occur and have been sold in quantity. At present the old copper mines are being reopened and other changes made in the operation of the property. In 1904 approximately 55 tons of metallic copper were produced in matte and ore. It is expected that in the future this product will be larger.

No extensive study of these mines was made in the course of the present investigation and no general account of the property will be given. The mines were visited, however, and the following notes are given for the sake of their bearing on the general problem of copper in this area. The history of the mines has been so completely summarized by Mr. Winslow* that it is not necessary to discuss it.

The mines are located in Madison county, east of the main St. Francois mountains, and among some outlying knobs of granite and porphyry. The ore bodies are typical disseminated deposits originating by metasomatic replacement of the dolomite. They occur near the base of the Bonne Terre limestone and principally in or near certain shaly beds in which *Lingulella* and other forms occur. Copper pyrites with sulphides of nickel and cobalt are found constantly in connection with the lead and are mainly separated at the dressing works.

In the southwestern part of the estate is a property long known as the "Copper mine" and now being reopened by the Mine La Motte Development Company, a corporation holding a lease from the main La Motte company. The copper mine is located on the flank of a small porphyry hill and the ore occurs in the Bonne Terre limestone near its base. The dolomite is dark colored, shaly, and includes small porphyry pebbles. The mine was originally opened some seventy-five years ago by means of an open pit from the back of which an adit was driven in along the bed. The old dri

*Winslow, Arthur, *Lead and zinc deposits*: Missouri Geol. Survey, vol. 6, 1, pp. 367-368; vol. 7, 1894, pp. 646-659.

had not yet been cleaned up when visited and were badly caved. In the rooms opened along this adit the sulphides were seen disseminated through approximately 10 feet of the dolomite. Galena, pyrite and chalcopyrite occur together, thoroughly disseminated through the rock. In one part of the mine the copper pyrite, with some dark mineral, probably chalcocite, was seen segregated in a distinct bed, 3 to 10 inches thick, toward the base of the deposit as a whole, and yet above the most important bed of galena. The copper bed seems to have been the one mainly taken out when the mine was formerly worked. The galena below is largely undisturbed.

The strata throughout the mine roll slightly and irregularly, these rolls being very similar to those common in coal mines, whereby separate irregular basins are marked out. In this case the irregularities very probably reflect the irregularities of the sea bottom upon which the beds were laid down.

The occurrence of copper in this mine as a sulphide is interesting because of its intimate relations to the great disseminated lead deposits of the region. Any explanation of the genesis of the one must take into account the presence of the other, and no attempt will be made at present to discuss this large subject.

South of Fredericktown, and at several other points in the vicinity, copper is found.* None of these prospects are now open. So far as is known the occurrences are similar to that at Mine La Motte.

GENERAL SUMMARY AND CONCLUSIONS.

Copper, in the form of sulphides and carbonates, has been found at many points in Southern Missouri and has been mined in several localities, notably in Ste. Genevieve, Madison, Shannon and Crawford counties. Very large deposits, rivaling those of the west, have not been found and are not to be expected. The character of the ore and the low cost of flux, fuel and labor make it possible to work some, at least, of the deposits with profit.

The ores show a preference for certain stratigraphic horizons, and, being bedded, may be prospected with ease and economy. The common association of sulphides with specular iron of the sandstone region points to the advisability of the investigation of the old iron pits. While any copper deposits found will probably not be large, they should be easily and cheaply mined. In Shannon county the most favorable localities are along the contact of porphyry and dolomite at points where the conglomerate beds at the base of the latter fill in shallow basins in the crystalline rocks. In the disseminated lead district of Southeastern Missouri copper occurs in connection with the lead, and at a few points can be saved to advantage.

The ores were doubtless formed by concentration of material originally disseminated in the surrounding rocks. Winslow and Robertson* some time since proved that both the crystalline rocks and the dolomites of this region contain copper in minute but sufficient amounts. The preference of the ore bodies for certain horizons is believed to be dependent mainly upon original unequal distribution of material resulting from land and sea conditions at the time the rocks were laid down. Excepting the Mine La Motte deposits, all the important copper deposits of Missouri are found in that part of the Potosi rocks which was laid down in shallow waters and when frequent changes of shore line were evidently occurring. The Ste.

*Winslow, Arthur, and Robertson, J. D., Lead and zinc deposits: Missouri Geol. Survey, vol. 7, 1894, pp. 470-480.

Genevieve deposit occurs in brecciated horizontal chert in the lower part of the Jefferson City limestone; the Sullivan deposit has been segregated from beds near, probably just beneath, the Roubidoux sandstone; and in the Casey mine the ore is found in the Roubidoux. The Slater, Jerktail and Sutton mines, in Shannon county, occur along the contact between old porphyry islands and the dolomites of the Gasconade formation. The Mine La Motte ores occur where the similar Bonne Terre limestone laps upon similar porphyry hills. Everywhere the distribution of the copper seems related to original shallow-water conditions. At some later period in the course of the work of underground waters this originally disseminated copper was segregated in the bodies now found.

SHANNON COUNTY COPPER.

REPORT OF PROF. J. T. HODGE.

(From Silliman's Journal of Science, vol. 43, pp. 66-1842.)

On the Current river the banks are generally precipitous, the limestone forming steep bluffs of great height, above which, in the hill tops, the quartzose rock is often seen cropping out. The limestone is of a light grey color, with crystalline texture, and lies in nearly horizontal strata. The rock is full of quartz veins, which run generally with the stratification, and should rather, therefore, be called beds of quartz. Stains of greenish hue, like those of carbonate copper, may be noticed almost everywhere on and through pieces of the limestone. I found no fossil shells in the limestone. In the silicious rocks above, a few imperfect enorninites were met with. I found a range of igneous rock—a red, compact silicious rock, close grained, flinty fracture, prophyretic—near where the limestone crosses Jack's Fork in the direction west of north and east of south, about five miles above its confluence with the river currents. At the contact of this range with the limestone on the south side of Jack's Fork, five miles up it, and a mile back, is a deposit of copper ore in the soil, principally a green carbonate; but the black oxide, with a little sulphurets, forms a considerable part of the whole. This has been dug over to the extent of about three-fourths of an acre since 1839, when it was discovered. The diggings extend to about ten feet average, the deepest hole being eighteen feet; but concerning this I could get no satisfactory information, no work being now done there. This mine is in a dilapidated condition, and little insight can be obtained as to the true position of the ore. The limestone and red rock meet each other very confusedly, there being near the surface no regular line of contact. Fissures or openings extend vertically down between the rocks, and these filled with mixture of iron ore, copper ore, clay gossan; while above the surface is composed of gravel, consisting *pebbles of quartz, chalcedony and jasper*, mixed with red and y

clay. The work over this small tract which alone was found to contain the ore was carried on very badly. Instead of the whole surface being stripped off clear to the rock, little holes and trenches were dug all over it; and where the loose ore was found most abundant, there the most digging was done. Sometimes the copper ore forms nearly the whole material from the surface down even to the depth of seven feet, the greatest thickness yet found to consist almost entirely of ore. It lies in irregular shaped masses, accompanied with hematitic ore, into which it passes, and these masses vary from pebbles up to the weight of seventy pounds. They are scattered through the clay or gossan, or lie sometimes in contact and sometimes tending to a horizontal position. The clay and gossan are found to be worth washing for the ore they contain. A little spot about twelve feet square, where the ore was most abundant is said to have produced as much as all the rest. Little veins of copper ore, principally carbonates, may be seen running through the limestone where it comes to the surface, and on the granite under the other ores is found a thin plate of oxide of copper incrusting the rock but not joined to it. The grain of the limestone is here irregular, the seams of stratification obliterated, and it is impossible to determine the amount of disturbance it has experienced. Veins of tiff (calspar) are occasionally found in it, and with them small fragments of oxide of copper interspersed, and crystals of pear spar, a rotten vein a foot thick, at about the point of contact of the two rocks, consists of a curious altered mixture of them with particles of carbonate of copper scattered through the mass. This sort of breccia is considered of some importance of indicating the proximity of ore. By following this rotten vein the true lodes will most likely be discovered, if such exist, as there is reason to believe is the case. No attempt to find ore by sinking a shaft through the limestone near the granite has been made, though there can be no doubt that the indications and the suitable ground for metallic veins warrant the undertaking. The furnace is about a mile from the diggings, on a little stream called Shawnee creek, which comes into Jack's Fork not far above its mouth. There the ore is hauled, beaten up by hand and washed, the gravel being washed three or four times; and the workmen receive for it when cleaned \$27 per thousand gross weight. The furnace is only about three feet high inside and a foot square. It can run only about a week before the whole inside must be pulled out and built up anew. It is built of quartz rock and lined with the same, and was originally much larger, and gradually diminished to its present internal capacity. A common overshot wheel, twelve feet in diameter, moves a large blacksmith's bellows; and this is all the machinery about the furnace. The fuel is pitch pine charcoal. * *

As to the nature of the ore, its origin, of which some judgment may

be formed of its probable continuance, it seems that the crevices or fissures, which the workmen describe as occurring in their diggings, have served as a passageway through which the ore has been projected from below, either in a melted state or in a state of sublimation, or by more slowly acting electrical gases; and that near the surface on the line of fissures (which is likely to be near the line of contact of the two rocks) the ore has found favorable circumstances to spread and deposit itself; and further, that these same circumstances may be expected to be renewed at different depths, and the ore there found in lateral injections between the limestone strata in veins and in the main fissures themselves. Veins of calspar are of frequent occurrence in these rocks; and in one particular place it was discovered some years ago in the red rock not far from the present copper diggings of uncommon thickness. These also accompany the better developed copper ore veins in the primary rocks on Lake Superior, and in other parts of the world. They pass into veins of copper ore, and veins of copper ore may be traced through different changes till they become veins of calspar. Copper ore, as well as lead ore, is obtained to some extent in this formation in England. The deepest copper mine in that country is the Eaton copper mine, Staffordshire, the shaft being 472 yards deep in the mountain limestone. * * *

It is a good country for water power; fine springs, ever flowing and never freezing, bursting out on the hillsides, and sometimes affording power enough for any works at their very source. The copper that was made was sent down on large flats, which were constructed for the purpose, and could carry from twenty to thirty tons each. About seventy-five tons altogether was made on the Current, and thus shipped to New Orleans.

"LA BELLE FRANCE."

(The Story of an Ancient Missouri Copper Mine, by Will H. Zorn, West Plains, Mo.)

According to historical facts and traditions there exists somewhere in this vicinity a copper mine that would make its owner rich as Creosus.* For over half a century a continual search has been made for the hidden treasure. Lives have been sacrificed in the quest for this buried mine, for such it was. But after sixty years, during which time more than a score of companies and miners have gone broke, "La Belle France" has been discovered.

In the early part of the nineteenth century when Ste. Genevieve was the metropolis of the upper region of the Louisiana Purchase Territory many hunters and trappers made the quaint French settlement their trading point. Bear, elk, beaver and buffalo hides were the principal products

*More recent investigation of "La Belle France," instigated by one of its owners, failed to find the rich as Creosus features.—Secretary Bureau.

of the forests which these pioneers of civilization brought out of the interior.

But one day a trapper named George Smith brought to Ste. Genevieve something that caused the French miners of that region to open their eyes. It was a piece of virgin copper, a mine of which would rival the famous Anaconda.

Among the Frenchmen who inspected the sample of ore brought in by the trapper was Henry Janis. He was a learned man and a mineralogist, who was then engaged in operating lead mines near Ste. Genevieve. Janis quickly perceived the value of the copper. Taking Joseph Slater, another Frenchman, who was also a miner, into his confidence, Janis made a bargain with the trapper.

For a flint lock rifle, which was then of great value, the trapper agreed to pilot Slater to the place where he found the copper boulder. With two trusted companions Slater and the trapper started out on their journey toward the setting sun. After many days of privations and suffering, footsore and ill, but never discouraged, the party reached the spot where George Smith declared he had found the virgin copper.

Slater established headquarters near the mouth of Jack's Fork, on what is now known as Shawnee creek, in the heart of the Ozark mountains. The Cherokee Indians, who then infested the country, were friendly and often visited the prospecting party. Many of them knew the old trapper and trader, who had seemingly forsaken his usual vocation of trapping and trading and joined the mining party.

Copper was found in profusion by Slater and his companions. One of them was sent back to Ste. Genevieve with a lot of samples to break the glad tidings of discovery and bring out more miners. He returned after due time with a force of men to operate the mines.

Slater then decided to erect a charcoal furnace in which to treat the ore. The furnace was constructed of rough stone and erected by the miners. In order to secure the blast necessary for operating the furnace primitive blacksmith's bellows was fashioned of tanned deerskins and hip-sawed boards.

How this bellows should be operated continuously was a problem the solution of which is still in evidence. From Shawnee Creek to the site of the smelter, a distance of two hundred yards, a deep ditch was dug. Water coming through the ditch from the creek, having a good fall, furnished power for an old-fashioned overshot wheel, which ran the bellows.

In this simple improvised furnace Joseph Slater smelted the copper-bearing ore. For a number of years he engaged in the work, but could not produce a large amount of copper. The mine from which the

ore was procured was located more than a mile from the smelter. All the workmen resided near the smelter.

To transport the copper to market was a tedious task, for there was danger, both from wild beasts and organized bands of thieves. The thieves made frequent journeys in boats up Black and Current rivers to raid the homes of the pioneers and give battle to some band of Indians, who were their constant foe. These river pirates, for such they were, often laid in wait for the loads of rich copper that left "La Belle France." Occasionally they would capture a load of the rich metal and take it to New Orleans, where it was sold.

Most of the ore smelted by Slater was placed on flat boats and floated down Current river. The boats followed this swiftly flowing picturesque stream to its conjunction with Black river; thence down that stream to the Mississippi. On reaching the "Father of Waters" the ore was transferred to a boat, and then taken to New Orleans. From there it was usually exported to Europe.

Another manner of getting the ore to market was to transport it in wagons, with ox teams, through the wilderness over the Indian trail, to Ste. Genevieve. This was more dangerous than the water route, for wolves and panthers were numerous in those days, and occasionally attacked the oxen when the vigilance of the drivers was somewhat relaxed.

Slater continued to operate the mine until 1840. Then trouble arose which caused him to demolish the furnace and completely hide from view any existing trace of his famous mine, "La Belle France."

In the time when Slater operated in Missouri the State was not surveyed. The opportunities for acquiring title to property were slight and the holdings of a person were not secure. The mining laws then in force in states where mining was carried on were not in vogue in Missouri.

About the year 1840 the government surveyor made his appearance in the Ozarks. Prior to that time Joseph Slater had filed in the Government land office a claim for the land on which the mine and smelter were located. He believed his title good until the transit man came along, and, in fact, surveyed him out of his possessions.

Slater had described his mine by certain bounds which in reality was the description of some bluffs and barren hillsides several miles away. He soon learned that a speculator named John Epps Cowan, of Washington, D. C., had bought the homestead right upon which the copper mine was located.

Then the mine was shut down. The miners scattered about country and few remained in the vicinity. Slater brooded over his *fortune, and finally decided that as he could no longer reap the be*

of many years of toil and privation no other person should. He called about him the few remaining persons who knew of the mine. After briefly explaining the condition of affairs Slater told them that he intended to bury the mine and prevent the person who had usurped his rights from reaping the reward of his years of toil.

The miners were of the same opinion. They set about their work and before many days had passed accomplished their purpose. Then each took upon himself a solemn and binding oath that they would never reveal the location of the hidden mine.

Slater then returned to Ste. Genevieve. He began a suit against John Epps Cowan for possession of the land on which "La Belle France" was located. For three years the case was in the courts and in 1843 a final decision was rendered by the Secretary of the Interior in favor of Cowan.

When the California gold excitement was at its height in 1849 Slater sought to regain lost fortune by a journey to the Golden Gate. He failed to find a fortune, returning to Ste. Genevieve several years later. He died in 1858 in Madison county, Missouri. His son, Robinson Slater, is a resident of Central Park, Montana. Another son, Felix Slater, was for several years sheriff of Madison county, Missouri, but has been dead for a number of years.

After the Secretary of the Interior decided the title of the land on which the mine was located to be vested in John Epps Cowan, a new company was organized in the East to work the mine. Men were sent to Missouri to push the work, and in time make fabulous fortunes for the promoters.

But no mine could be found. Slater and his companions had hidden the main shaft so well that after several years of patient research the hunt was given up. "La Belle France" had passed away.

Living in the vicinity of the mine were two of the men who had taken the oath never to reveal the location of the hidden treasure. These men were Wm. Mahan and Brooks Matney. They were offered tempting sums of money to tell of its location, but the terrible oath they had taken the secret in their breasts. It perished with them, as both men have lead for several years.

There is only one person now living who has any recollection of seeing "La Belle France." This man is "Uncle" Alec Deatherage, who lives near Winona, about sixteen miles from where the mine is located. He was one of the workmen at the mine, and it was the custom to send a horse each day from the homestead nearby to the mine to ride home. "Uncle" Alec describes the mine as a *sit of copper*. But he can not locate it, for he is now almost

totally blind. He was a small boy when he visited the mine, and all traces of it were obliterated when Slater and his companions decided to hide it from man forever.

Numerous persons have searched for the mine. In 1876 some parties who were "gophering" around found about eight tons of ore that Slater had buried. This was hauled to Mill Spring, on the Iron Mountain railroad, a distance of 60 miles, and shipped to the smelters. It brought the finders \$175 per ton.

The title to the property then passed from one to another, and recently it became general belief that "La Belle France" was a myth; that no such deposit of copper had ever existed in the Ozark mountains.

Two years ago Frank M. Rogers, a Montana miner, who had heard of the traditions regarding Slater and the mine, drifted into the country. His experienced eye detected that there was ground for the story. The unmistakable copper shines proved that somewhere near the mother lode was to be found. Rogers got a lease on the property and went to work.

His first find, which is now believed to be the original shaft in which Slater worked, was a shaft that afterwards proved to be 130 feet deep. It had been filled up with debris of all kinds and slag from the furnace.

It was dangerous work, this work of reopening the "buried" shaft. Rogers narrowly escaped with his life. After finding the shaft he set to work hoisting the debris out of it. Getting down some 15 feet he found a floor and began picking it out, the intention being to inspect the supposed bottom of the mine.

Instead of being the bottom of the shaft this proved to be a false bottom, put there by the Frenchman in order to hold up the debris that he had hoped would forever conceal his treasure from any prowler. It was only by spasmodically catching hold of the timber across the shaft with one arm that Rogers saved himself from dropping through this curious and treacherous floor that Slater had put there.

This shaft was found to contain about 40 drills, a number of striking hammers and an old iron kettle, which was used to elevate the ore and dirt to the surface. The manner in which the rock was blasted was learned when several bundles of goose and turkey quills were found in the shaft. Lime was used for blasting, and the quills served the purpose for which the modern fuse is used.

Several fine strata of copper-bearing ore are found in this shaft. The richest deposits are found in the porphyretic formation, which is of the first volcanic overflow. Other deposits of copper are found in the metamorphic formation, which is of the most recent geological age and is formed of minute particles of all the previous formations, liberated by disintegration.

From this shaft two sheets of copper were taken that will assay 75 per cent. pure. The sheets are scarcely half an inch thick, and by rattling them together a sound is made which resembles the chimes of bells.

Several other shafts have been found in the locality, which is known as Copper Flat. But the recent discoveries are now acknowledged to be the original Slater mine, "La Belle France."

COBALT.

In Madison county, at the famous old Mine La Motte, cobalt, with other rare and valuable minerals, has been produced in small quantity for a number of years. During more recent years better facilities have increased the output of this by-product of the lead mine, and the value of cobalt produced in the year 1904 is estimated at \$89,708.

The chemical symbol of cobalt is Co., atomic weight 58.8. It is a metal of steel-gray color and of specific gravity, variously estimated from 8.52 to 8.95. It closely resembles nickel, with which it most generally occurs, the atomic weight of both metals being the same, and their specific gravity nearly or quite the same. In ductility and tenacity the metals are very similar, and they have in many respects a close resemblance to iron, but are less fusible and less magnetic than that metal. Cobalt is used to a small extent for plating the surface of iron, but is a rarer and more expensive metal than nickel, which is usually employed for that purpose. The important ores of cobalt are cobaltite, smaltite and linnaeites. Cobalt ores are found in numerous localities, but nowhere in large quantity. The mineral, except in its chemical combination, has few important economic uses. The protoxide furnishes a beautiful blue color of importance in painting, and especially in the decoration of porcelain and glass wares.

NICKEL.

Nickel ores in small quantity have been produced for several years as a by-product in the lead mines of Madison county. The value of the output for the year 1904 was \$25,382.

The metal is closely related to cobalt, has its chemical symbol Ni, and atomic weight 58. The specific gravity of nickel is given at 8.357 when cast, and 8.729 when rolled; in this and in atomic weight it differs little from cobalt. The metal is also closely related in physical properties to iron, which it resembles in color, possessing, however, a more bluish cast. It is magnetic, but in less degree than iron; but ranks with the latter in those qualities of tenacity, malleability and ductility, which gives it

useful prominence in the arts. The scarcity of the metal and its useful properties make it a product of considerable value.

In 1751 the metal was discovered by Cronstedt, but only in more recent years has its manifold uses become prominent and important beyond those of the chemical laboratory.

Its market value has varied greatly since the metal has found its way into general use as an ingredient in numerous alloys and for plating iron to improve its appearance and prevent oxidation.

The metal is also somewhat extensively used in coinage in the United States, Belgium, Switzerland, Germany and Mexico. Nickel bromide is sometimes employed in medicine as an anti-spasmodic and its chloride and sulphate as tonics.

BARYTA.

There are few, if any, states in the Union with greater diversity of marketable minerals than Missouri. These valuable products are not only present in the strata of the rocks and clays, but occur in such abundance in many places that mining them is profitable employment. During the past few years some attention has been attracted to a very common mineral of the Ozark region, commonly known as tiff among miners and prospectors. Its uses and value were only partially known by the mineral hunters who met with it frequently in their search for lead and zinc. It was thought to be a product of so little value that few indeed gave thought to the matter of mining and marketing the mineral.

In the last few years the uses of baryta have been very materially expanded, and the mineral is now coming into more particular notice and greater favor with that class of men who devote their time and energies to taking from the lap of nature her manifold mineral gifts.

The mineral baryta is a sulphate of barium and is one of the dense and heavy minerals of the earth. It is hard and firm in texture and pearly white in color, except when tinted to some shade of red or orange, with oxide of iron. It is only one-twelfth lighter in weight than zinc ore, and in consequence of its close proximity in weight to that metal, is difficult to separate by the ordinary process employed by miners when found, as it sometimes is, mingled and mixed with zinc and lead in disseminated ores.

Baryum, the metallic base of baryta, is a poisonous element, but when locked up in chemical union with oxygen, sulphur or other elements, like chlorine in common table salt, loses much, if not all, of its dangerous qualities, and no appreciable evil effect seems to be made up *those who constantly handle and manufacture it.*

The largest single deposit of this strange tripoli stone underlies 600 acres of land, owned by the American Tripoli Company, of No. 122 Pine street, St. Louis, Mo.

This tract is at the western border of Newton county, just above Seneca.

A fully equipped flour mill, having the capacity of one car load of stone flour per day, and a turning works capable of turning ten tons of quarry stone into filter shapes each day, are located on the tract. This mill has the singular distinction of being the only concern in the world devoted exclusively to this work.

AMERICAN TRIPOLI COMPANY.

The American Tripoli company is incorporated under the laws of Missouri and capitalized for \$100,000. The company owns in fee about 600 acres of land on the western border of Newton county, in the vicinity of Seneca, Mo. The working facilities on the land consist of a complete mill equipped with two boilers, two steam pumps, two crushers, turning lathes, stone flouring mill, and all necessary machinery and apparatus for mining and manufacturing tripoli into all merchantable articles and marketable forms. The postoffice address of the company is at Seneca, Mo. H. Luscomb, president, receives mail at that office.

The company erected several new buildings during the year 1904, including an electric light plant and new office building. The amount of tripoli produced during the year was 7,200,000 pounds, the value of which was \$38,000.00.

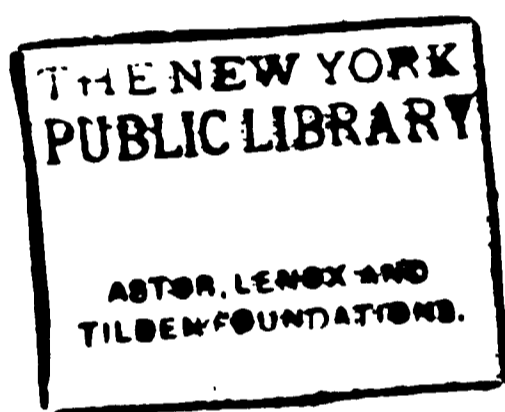
ST. FRANCOIS COUNTY.

This county, so noted for its very large productions of lead ore, continues to lead all other sections. Its output of lead ore for 1904 was 178,708,000 pounds, and would have been very much larger, but for strikes which caused the closing down of several mines which were very productive. This unfortunate occurrence caused a shortage, as compared with the year previous, of 6,618,000 pounds from one company, and 3,611,781 pounds from another, amounting to 10,229,781 pounds in all. The increase in production from the other concerns, however, caused a loss only as compared with 1903 of but 2,972 tons. Still this county mined 86.18 per cent of the entire product of the Eastern District.

The Central Lead Company, hereinafter described in detail, passed into the hands of the Guggenheims early in the current year. The Central has been a large producer for ten years, its output having reached 21,311,000 pounds in a single year. The equipment here is first class, *with three mines opened and worked at the 370 foot level.* The 1904

87 JOSEPH LEAD CO MILLS AT BONNE TERRE MO.





acres of land which the company owned is located in the famous Flat River Valley and is of itself a great possession. The Federal Lead Company, with its 14,000 acres, also owned by the Guggenheims, adjoins the Central. In reading the detailed statement and observing the cuts of the respective plants of both the Central and Federal, a better idea may be formed of the holdings of the Guggenheims in this county. The advent of this well known mining company in the county has occasioned an absorbing interest to be taken by all classes of citizens. Whatever may be the result of the presence of this great combination, the fact remains that this county has attracted to it one of the most successful and powerful mining concerns in all North America.

The St. Joseph Lead Company, from its immense holdings, in mineral land, numerous mines, concentrating plants, etc., one might assume it had reached the limit for all present necessities. Not so, however, as it has just completed and put into service one of the largest, most modern and complete concentrating plants to be found anywhere in the United States. The purchase of additional mining property and the number of diamond drills it had at work recently, is a display of unusual activity on the part of this great company. For forty years the management of the company has been of such a high class order as to create confidence in all of its undertakings. The recent progress and activities of the company, therefore, furnish to the mining industry of the county most promising results for the future.

The Doe Run Lead Company, St. Louis Smelting and Refining Company and the Deslodge Consolidated Lead Company, each and all extra large and strong companies, have added immensely to their respective plants. All of which indicate a state of trade in the lead industry of the county more healthy than we have ever noticed before. The Columbia Lead Company has been doing some prospecting work, and it is hoped that it may soon commence again. Much might be mentioned relative to further prospect work, which has so widened out as to extend into adjoining counties. This is the work of some of our strong companies. Our experience has been such as to cause us to refrain from anticipating or divulging some things known to us. The prospector in an untried field hazards much and he is entitled to his find. The diamond drill dots the surface at very many points and this cannot be very well concealed, still the core which makes plain the character of the material passed through, is hidden. Whether this core contains the rock rich in lead or barren material is a secret belonging to the rightful owner. There are 262,400 acres of land in the county, of which 175,000 acres are known to furnish evidence of mineralization, but 44,000 acres are owned in fee by the mining companies and the same largely

tested by the diamond drill. The lead ore of this county is known as the disseminated lead ore and here found in greater abundance than elsewhere in this country. There is a continuity of the ore run of this nature, found in this county, not yet uncovered in other sections of this State. Portions of Madison and Washington counties, adjoining St. Francois, furnish this ore, but in no other county in the State, excepting a very small quantity in Camden, is the ore mined and found. The geologist points out localities where certain minerals may be found, but without the surface indications, one man sees as deep in the ground as another. Long continued experience in actual mining and in the search of mineral, has no doubt given some men better ideas as to the proper place to make tests, but the best of them are sadly fooled. We can remember when the miner in the Joplin district would not think of sinking on the crest of the hill—he must seek a draw. The fallacy of that idea has been exploded and some of the richest mines of that region are now found in the places rejected. Experience and association with those who have had long practical experience would have us, if endeavoring to find a mine, to hover around that section where the big ore bodies have been worked. This county, however, covers so much territory of a promising nature for prospect work as to present a most inviting field for the prospector.

We are late in the issue of our report for 1904, but with the opportunity afforded thereby in observing the activities in the mining industry during the current year, we are convinced that 1905 will break all records made. The production of minerals will not only be far greater in tonnage, but the value of the product much greater by far than at any period of our history.

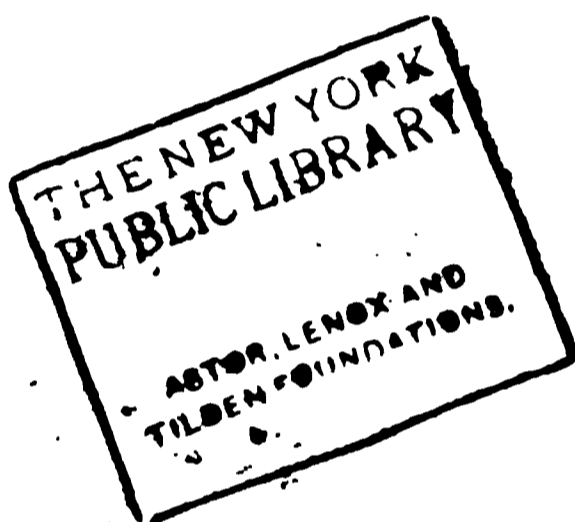
The following is a summary of the results from mining in this county for the year ending December 31, 1904:

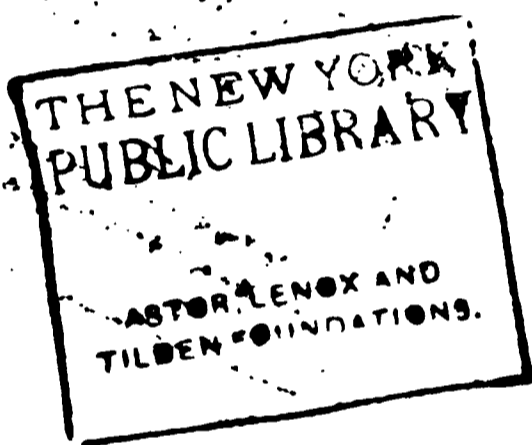
Acres of land in fee by mining companies.....	44,000
Capitalization of mining companies.....	\$19,600,000
Number of mines operated	21
Average depth of shafts.....	390
Tons of lead ore mined.....	178,708,000
Tons of baryta or tiff mined.....	16,500,000
Tons of iron ore mined.....	11,760,000
Value of the production.....	\$4,086,000

the difference between the Eastern and Western District price of lead ore has been \$7.00 per ton in favor of the latter. This year the difference is \$10.80 per ton in favor of the Eastern District.

GENERAL MILLS - Now owned by the Federal Land Co. at First Street, Mo.









In the Western District the prices are based upon actual cash sales, while in the Eastern prices are in all cases estimates. Lead ore averaged in the Western District for 1903, \$53.00 per ton, and in 1904, \$56.00 per ton. All who are familiar with lead prices know that lead sold for more in 1904 than it did in 1903, yet the estimates furnished by operators in this county averaged less than for the former year. We have figured that the lead ore product of the county based upon an average of \$3.00 more per ton, as the figures and facts seem to warrant, would give the value of the county product as \$4,354,062.

CENTRAL LEAD COMPANY.

The property of this company is situated in the very heart of the great Flat River basin. Surface mining after primitive methods commenced here over fifty years ago. In 1867 the diamond drill was introduced here and a few holes to the 240-foot level were drilled. Capital was timid and not until 1890 was a serious effort made to open up this property. During this year a shaft was started with the intention of reaching the level made by the diamond drill, and while this shaft was being sunk, diamond drilling was again commenced and a much richer ore body passed through than was demonstrated previously.

This lower ore body was struck at 360 and continued to 380 feet: the shaft was wisely continued beyond the 240 level to the 380 foot level. The work of sinking the shaft, developing the ore body, handling the water and installing a plant embracing the most approved plans at that date occupied much time, and it was not until May, 1894, that the mines commenced producing ore.

The table following shows the product from this property to the present:

Year.	Pounds of ore.	Value.
1894.....	700,000	89,100
1895.....	7,666,000	82,930
1896.....	10,941,000	128,060
1897.....	16,024,000	192,294
1898.....	15,863,000	311,311
1899.....	13,396,591	267,932
1900.....	21,311,000	482,694
1901.....	18,442,000	414,930
1902.....	21,106,000	422,100
1903.....	19,148,000	449,978
1904.....	12,794,000	367,061
Total.....	157,391,591	\$3,068,390

From the above table this property may be noticed to have suffered in production by comparison with former years. This falling off, however, is not due to the ore body or unexpected difficulty in mining the same, but solely to a strike, which caused a suspension of work in two out of three shafts heretofore worked. This property under the changed conditions and present management, with its vast resources and facilities, may be expected to outstrip its best output at any period of the past. The Guggenheim's have since purchased the 1604 acres of land owned by the Central Lead Company, together with the three mines already opened and its entire plant.

COLUMBIA LEAD COMPANY.

This company controls 941 acres of land bordering some of the most productive properties in the Flat River district.

The shaft had been sunk, the mill and other structures completed and development work advanced to the point of regular production with the close of the year of 1899. The following table furnishes the output and the amount received for the ore from 1900 to 1904, inclusive:

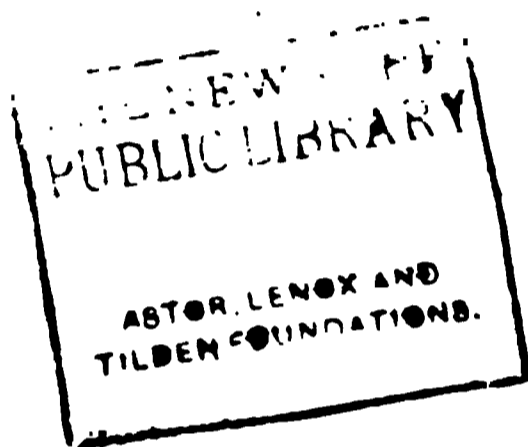
Year.	Pounds of ore.	Value.
1900.....	5,409,000	\$122,514
1901.....	11,850,000	207,375
1902.....	10,000,000	175,000
1903.....	5,400,000	119,631
1904.....	3,566,000	79,452
Totals.....	36,225,000	\$703,972

From the above figures it is apparent that something is wrong. That disagreement in the management existed was manifested by the leasing of the property to the Commercial Lead Company, and the latter company abandoning the lease September 30, 1904. The appointment of a receiver followed. It is not a pleasant task to make reference to such unsatisfactory conditions, and the more so in this instance, because it happens in St. Francois county, where such results so very seldom occur. One reason furnished for trouble at this place is about as follows:

With a low grade ore, a 400 foot shaft and expensive machinery, a certain volume of business must be done, and a larger amount of material must be handled daily if dividends are to be made. If a mill is constructed of such limited capacity that the required amount of material cannot be handled that is necessary to pay expenses and dividends, then *a mistake has been made*. The receiver is prospecting with a diamond

THE ST. LOUIS CONSOLIDATED TRADING CO. BUILDING, ST. LOUIS, MO.





drill, but what does he want with more ore if he cannot handle what he already has? If an enlargement of the mill was in progress we could reconcile this at present paradoxical condition. The Inspector is of the opinion that the ore is not as easy to reach as it might be.

DESLOGE CONSOLIDATED LEAD COMPANY.

This property is located four miles south of Bonne Terre, connected with the Mississippi River and Bonne Terre Railroad by switches, and embraces 3,900 acres of land. The company is capitalized at \$1,000,000, and has for its officers Louis Fusz, president; F. Desloge, vice-president, and J. F. Valle, secretary.

During the year 1904 three shafts were operated with depths of 300, 300 and 350 feet, respectively. There were employed in the mines, mill and furnaces a total of 233 men. The production of ore amounted to 25,484,000 pounds, valued at \$555,359.00.

Improvements for the year consist of the addition of one Jeansville pump, having a capacity of 1500 gallons per minute. Self-supporting steel smoke stack, 7 feet in diameter, 120 feet in height, and minus guy rods; the base of this stack is of concrete 14 feet square. One new O'Brien water tube boiler of 375 horse power; one Cochran heater of 2,000 capacity with assorted water purifying attachments; one 150 horse power Hyena boiler installed at the river pumping station. The 20 old wooden jigs have been replaced by 10 iron double 3 compartment jigs, which are expected to render much better service with much less loss of motion. In the underground work a small air drill called the "Little Wonder" is in use. It weighs but 17 pounds and is employed in taking down loose back, loose rock, and as it can be held by the hand, it is often used on high scaffolds. Was informed by one of the foremen at this mine that he could, with this machine, drill from 75 to 100 feet of shallows, say 4 foot holes per shift; it was found to be particularly serviceable in drilling block holes, where large blocks have been blown off. This machine is so arranged that the exhaust can be utilized to clean out the cuttings. There has been no effort made during the year to increase the capacity and the improvements made are considered only as betterments.

Mr. Firman N. Desloge of Desloge is the superintendent of the company, and has taken general supervision of all departments. It was currently rumored at one time that the Guggenheims had secured the control of this property, but this appears to have been an error.

The table will show details as to machinery, etc.

The mines are uniformly kept in the safest manner, making the work of the inspection comparatively easy.

DOE RUN LEAD COMPANY.

This company has been constantly producing for the past seventeen years, always abreast with the most progressive in the employment of all modern devices which tend to the safety of its mines and the economical running of its plants, and handling of its product.

The company was organized in 1887 with a capital stock of \$750,000. Since its organization it has with each succeeding year added to its holdings and equipment. It now owns 4,000 acres of land, much of which is located in the best mineral section of Southeast Missouri. Its present capitalization is given as \$4,000,000, and it is officered by men of long and wide experience in the mining business. Dwight A. Jones is president; C. B. Parsons, vice-president; F. T. Graves, secretary, and Hugh N. Camp, Jr., treasurer.

The management at the mines and the concentrating plant at Doe Run come under the direct supervision of Mr. F. P. Graves, who has for years devoted his fine talents to the advancement of the company, a company having the distinction of producing nearly one-sixth of the entire lead product of the State.

The three great mines operated by the company are entered through shafts having depths of 398, 405 and 425 feet, respectively. There was produced during the year 1904 lead ore amounting to 38,200,000 pounds and valued at one million dollars.

The company employs at its mines 398 men, and at its mills and furnaces 265 men, or a total of 663 men. Some idea of its plant may be gathered from the cuts found in this report, while the details of the machinery in use may be noted in the tables herein.

The following table shows the yearly production from these mines from 1888 to 1904, inclusive:

Years.	Pounds.
For the fiscal year ending—	
June 30, 1888.....	5,800,000
June 30, 1889.....	10,487,000
June 30, 1890.....	11,032,400
June 30, 1891.....	8,437,900
June 30, 1892.....	6,696,200
June 30, 1893.....	7,186,600
June 30, 1894.....	9,018,540
June 30, 1895.....	11,400,000
June 30, 1896.....	20,684,000
June 30, 1897.....	25,264,400

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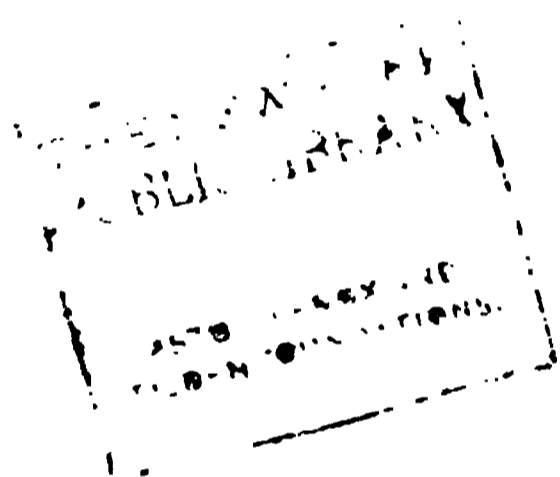
ASTOR LENOX AND
TILDEN FOUNDATIONS



DOE RUN LEAD CO.—TWELVE CALCINE FURNACES AT DOE RUN, MO.

DOE RUN LEAF CO MILL AT DOE RUN, MO.





Years.	Pounds.
June 30, 1898.....	24,800,000
June 30, 1899.....	24,580,000
June 30, 1900.....	23,860,000
June 30 to December 31, 1900.....	14,290,000
For the calendar year ending—	
December 31, 1901.....	33,064,000
December 31, 1902.....	34,060,000
December 31, 1903.....	38,840,000
December 31, 1904.....	38,200,000
Total.....	347,701,040

In making deductions from the above table, we find that of the entire output made by the company during the seventeen years of its operations, that there was mined 347,701,640 pounds of lead ore, and that of this sum 267,642,400 pounds were mined in the last half of the period mentioned, or over three-fourths of the total production.

In the matter of improvements in progress and contemplated for the current year, we simply mention some which we noted. At Mine No. 2, Flat River, a new boiler house is under construction in which there will be installed three new Hyena boilers, also an electric engine house. The old boiler house will be converted into a coal bin, increasing the storage capacity of the bins to that extent, so that a shortage in the coal supply hereafter will not cut the figure with this company that was experienced several winters ago. Two Gates crushers, a No. 2 and a No. 5, have been purchased and will be placed at mines Nos. 3 and 4. An iron conveyor has been provided for, which will deliver the material to the No. 5 crusher, and from thence carry it to the Bonne Terre and M. R. railroad cars by an iron bucket conveyor. This automatic handling of the material is a great improvement over the old method, as it avoids the transportation of dead rock, which was formerly taken to Doe Run by rail. The conveyors are housed and covered with corrugated iron. At each of the crushers an electric motor has been installed for running the same.

These improvements are now being made and will be more fully described in the 1905 report.

ST. JOSEPH LEAD COMPANY.

This company is not only the oldest company by reason of its continued operations, but it is one of the largest in point of its products the value of the same. It is capitalized at \$6,000,000, and owns 19 acres of land, including the mineral rights. Mr. Dwight A. Jones,

5 Mission street, New York City, is president; C. B. Parsons, resident director and superintendent, Bonne Terre, Mo., and R. R. S. Parsons, assistant superintendent, Bonne Terre, Mo.

This company with its 19,000 acres of mineral land, which will require ages to exhaust of its valuable treasures, its concentrating plants located at different points on its property, each of great capacity and equipped with every approved modern appliance; its up-to-date smelter more than equal to the demands made upon it, enable this company to reach out to the many hundreds of places upon its lands where the lead ore has been demonstrated by the diamond drill, extract the ore, separate it from the rock, clean it, smelt it and make it ready for the use of man on its own mills, furnaces and smelters, and then transport it north or south to great competitive railway systems or direct to the great water highway, where its refined product is open to the markets of the entire world, without dictation or obligation to any railroad company, mining industry, smelter or trust.

So much has been written concerning this company and its plants, that nothing remains new that can be noticed, except the added improvements which come with each succeeding year.

Description of the New Hoffman Mill.

The new mill built by the St. Joseph Lead Company during the years 1903-1904, is located at Owl Creek, about 4½ miles west of Flat River. It has a capacity of about 1200 tons per 24 hours, and the mill proper is divided into 4 sections of 300 tons capacity each. Automatic handling of the material and the adoption of electric motor drive are the essential features of the plant. At present only the ore from two shafts is treated, viz.: the ore from Hunt shaft, which is hauled to it in railroad cars, and the ore from Hoffman shaft, which is delivered to it direct from the mine cars.

The plant as a whole is divided into three separate buildings: (1) power house, including engine room, condenser and boiler room; (2) crusher house; (3) mill.

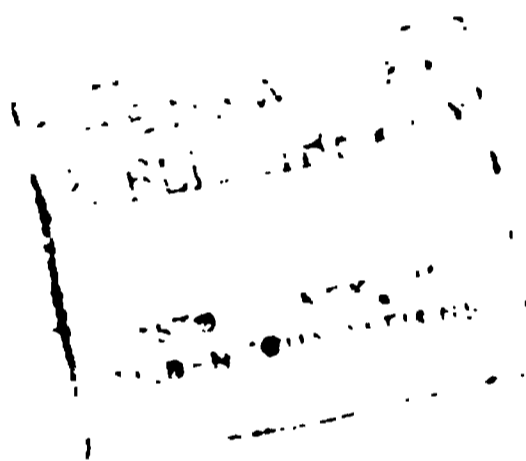
The power house consists of:

(a) The boiler room, equipped with five 300 horse-power water tube boilers, built by the Heine Safety Boiler Company of St. Louis.

(b) The condenser room, which contains a Wheeler condenser, which condenses all steam used in the engines, a Cochrane heater, two Laidlaw-Dunn-Gordon feed pumps, one Laidlaw-Dunn-Gordon Underwriter fire pump.

NEW HOFFMAN MILL, ST. JOSEPH LEAD CO. ST. FRANCISCO CALIF. N.Y. 301





(c) The engine room includes one Ingersoll Sargeant Corliss compound condensing two-stage air compressor with 1,800 cubic feet capacity; one Rand Imperial type two-stage air compressor of 1,500 cubic feet capacity; two 450 horse-power cross compound condensing Fulton steam engines, each direct connected to a 300 K. W. direct current generator, built by the National Electric Company; one 75 horse-power Chuse engine, direct connected to a 50 K. W. Westinghouse generator. The two 300 K. W. generators furnish the power for the crushing and mill machinery, and altogether 46 motors, varying in sizes from 5 to 60 horse-power, are operated by them.

(2) The crusher house is built close up to the Hoffman shaft building, and the ore from the outlying shafts (at present only Hunt shaft), is hauled by railroad cars and dumped into a storage bin of 400 tons capacity, from which it is discharged into Jeffrey steel conveyors and delivered by them into the crushers. Before any ore passes into the crusher it falls on to a grizzly with bars $2\frac{1}{2}$ inches apart, so that the first crusher, which is a No. 6 Gates gyratory crusher, only receives material above $2\frac{1}{2}$ inches. The ore below $2\frac{1}{2}$ inches, which passes through the grizzly joins the ore, which is crushed in the No. 6 crusher, and it falls together into a revolving screen 40 inches in diameter by 15 inches long, with $1\frac{1}{4}$ inch perforations. The rejections from the revolving screen (from $1\frac{1}{2}$ inch and above) are discharged into two No. 4 Gates crushers, which break same to $1\frac{1}{4}$ inch size or less. The entire material below $1\frac{1}{4}$ then fall together into a 14-inch rubber belt conveyor, which runs at an angle of $22\frac{1}{2}$ degrees, and is carried up into the main mill building. Here it is discharged into another 14-inch belt conveyor, which runs horizontally over the main mill bin. This conveyor is equipped with an automatic unloading carriage, by means of which the ore is evenly divided into the main ore bin, which has a storage capacity of 4,000 tons. The three crushers, revolving screens, and all the conveyors, including the one over the main ore bin, are each driven by individual motors, which are controlled by switches and starting boxes, located in the crusher house, thus affording an immediate shut down of any one machine in case of accident.

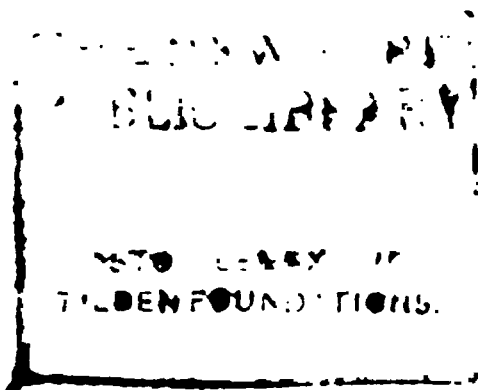
(3) The mill. In the arrangement of the mill machinery proper, the unit system has been adopted. The mill, as a whole, is first divided into two main parts, which can be run entirely separate from each other. Each main part is again divided into two equal sections or units, each of which has a capacity of 300 tons. The operation of each unit is independent of the other, and the motors which drive the different machines of each unit, are controlled by switches and starting boxes located at two main distributing stations. Following the ore through the mill

machinery of one section, we find that it is discharged at the bottom of the main mill ore bin by means of two automatic feeders into a 14-inch bucket elevator, which carries it to the first set of sizing trommels, having 9 m/m perforations. The rejections (9 m/m and over) fall back to the lower floor unto a set of high speed Gates crushing rolls, are broken up finer and returned to the first set of trommels for further classification. The troughs of the above trommels pass into a second set of trommels with 5 m/m perforations. These take rejections of 5 to 9 m/m, which are sent to six sets of two compartment jigs and troughs, which pass to a third set of trommels, having $2\frac{1}{2}$ m/m perforations. These give rejections $2\frac{1}{2}$ m/m to 5 m/m which pass it to six sets of three compartment jigs, and troughs (below $2\frac{1}{2}$ m/m) which first pass into a hydraulic sand classifier. This takes out all the material below $2\frac{1}{2}$ m/m, which is treated on six two compartment jigs. The slimes below 1 m/m undergo a careful classification in a system of hydraulic classifiers, before they go to the wilfley tables, of which eleven are operated in each section. As most of the value in the ore is recovered by the jig process, the table feed is light, the tables receiving only 20 per cent of the ore put through the mill. This is due partly to the screening of the crushed ore, which comes from the crusher plant, prior to the second crushing in the rolls, partly to the recovery of a large per cent of coarse concentrated in the 5 to 9 m/m jigs. All middlings resulting from the jigs are recrushed by middling rolls and returned to the 5 m/m trommel. The jig tailings are discharged onto a 24-inch belt conveyor, which runs below the jig floor, and carried into a 600-ton tailing tank, out of which they are loaded into railroad cars to serve either as railroad ballast or concrete material. The concentrated products of the entire mill are handled by a system of conveyors, by means of which they are delivered direct into the railroad cars, ready for shipment to the smelter. The water used in the mill is pumped from Big river. Altogether about 6,000 gallons of water is used per minute.

For assistance in the above description of the "Hoffman Mill," we indebted to Mr. O. M. Billhartz, consulting engineer.

Some idea of the progress made by the company in the production lead ore may be gathered from the following table. Lead ore statistics prior to the period covered in the table were not always correct:

Table showing the product of the St. Joseph Lead Company from 1899 to 1900 inclusive:





FEDERAL LEAD CO.—STEEL TOWER, BELT CONVEYOR, ENGINE AND BOILER HOUSES, AT FLAT RIVER, MO.

Pounds of lead.	Year.	Pounds of lead.
..... 522,000	1888.....	26,054,000
..... 646,000	1889.....	27,200,000
..... 1,718,000	1890.....	27,702,000
..... 2,120,000	1891.....	28,224,000
..... 2,160,000	1892.....	26,948,000
..... 2,590,000	1893.....	28,842,000
..... 3,926,000	1894.....	36,178,000
..... 4,872,000	1895.....	40,823,000
..... 4,102,000	1896.....	43,817,000
..... 5,638,000	1897.....	46,174,000
..... 7,130,000	1898.....	40,685,000
..... 8,508,000	1899.....	40,049,150
..... 10,634,000	1900.....	36,348,000
..... 14,788,000	1901.....	46,834,000
..... 11,788,000	1902.....	53,566,700
..... 13,608,000	1903.....	56,962,000
..... 19,538,000	1904.....	56,834,000
..... 14,744,000	Total.....	807,162,850
..... 14,774,000		

FEDERAL LEAD COMPANY.

his company, destined from all appearances to prove such a large in the lead production of this State, commenced operations in

There was from the start until 1903 an unnecessary secrecy on the part of its then superintendent concerning its plant and property. The excuse that new inventions were being introduced of which the superintendent, at the time, did not care to make mention, until they were tested and proven, had its effect on the inspector, and no effort was made to get up its mill. At this time the property, known as the Derby Lead Company, was thought to be controlled by the Federal people, which was finally proved to be true. Not until the present superintendent, Mr. M. Fitzgerald, took charge, did the inspector secure any assistance in getting a description of its mill. The mill and the equipment has now been fully described, and cuts are introduced again in this report to furnish an idea of their proportions.

For the year 1904 we find the company in control of 14,000 acres of land, located in St. Francois and Washington counties. More recent leases largely increases its acreage, and adds much to its productive territory. The purchase in the early part of the current year

the Central Lead Company, a very large concern of itself, with many acres of the finest mineral land, three large producing mines and excellent plant, will easily place the company in the matter of production, in the near future, among the very top notchers.

The year 1904, found the company capitalized at \$5,000,00 and officered as follows:

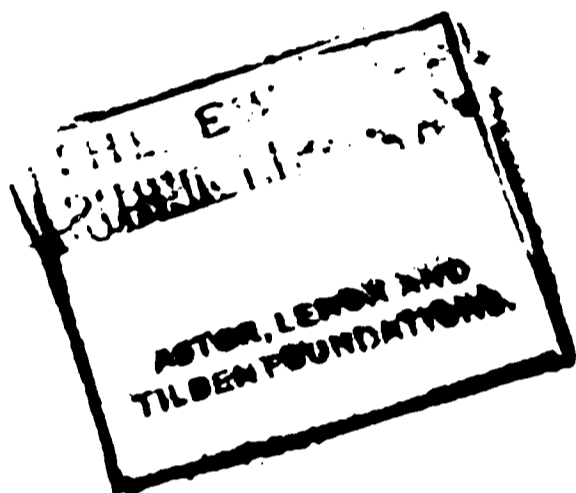
Simon Guggenheim, president; Daniel Guggenheim, vice-president; W. W. Porter, secretary; Morris Guggenheim, treasurer, and S. R. Guggenheim, assistant treasurer.

The association of the above names, so noted in the varied fields of the mining industry of the United States, cannot other than emphasize the importance of the Southeast Missouri lead district. The large holdings of these gentlemen in our State, where our soft lead ores are in such abundance and demand, should not work an injury, but rather prove a protection to the industry. From conditions existing neither should it be feared that this company will absorb the other holdings in the district. The three great remaining companies operating in the disseminated lead district of the State are the St. Joseph Lead Company, the St. Louis Smelting and Refining Company, and the Desloge Consolidated Lead Company, and each is peculiarly independent and strong, owning an independent line of railway which connects at its initial point with the largest railroad systems of the country and the great Mississippi river, while it intersects on its way to its terminal points competitive lines of railroad, affording the best possible shipping facilities. Then with a territory acquired by actual purchase, a vast domain, embracing from forty to fifty thousand acres, largely tested and proven by the diamond drill to be minable land, guarantees to them a supply of lead ore that many generations to come will not see exhausted. There being no possibility of a diminution in the uses and demand for lead ore, the stockholders of one, if not all the concerns above mentioned, having reaped richly through their Southeast Missouri mining investments and having an eye to their posterity, seek for them the surest and most permanent of securities. Backed as these companies are with the millions stored away for future use and locked in by stone walls 300 and 400 feet thick, what could induce them to part with such an heritage, unless not only the present but the long future be taken into the calculation? Some sections may come under the domination of a single trust, but hardly Southeast Missouri, where some of its independent operators control immense deposits of ore, the smelters to refine it and the shipping facilities to place the commodity where the public can purchase it.

The following is a summary of the more important changes and additions made at the plants of the Federal Lead Company during the past year.

TRIPPLING LEAD CO - MILL AND WATER TOWER AT PLATT RIVER, MO.





Tailings Handling Plant—The tailings from the mill were formerly run through launders and dumped on the slope to the west of the plant. The available space, however, rapidly filled up and it became necessary to provide other means for removing the material. To this end a special plant has been installed.

It consists principally of an elevated wheel of 53-feet diameter, built of structural steel and provided with buckets along the inside of the rim. The tailings coming from the mill are discharged into the buckets and by means of the wheel, which is driven by a 25 horse-power motor at a rate of $3\frac{1}{4}$ revolutions per minute, dumped into a tank where the coarse chatts settle, while the water carrying the slimes passes an overflow at the end of the tank and flows through a launder 1,500 feet long to five fine settling tanks, where the slimes settle. The water which is drawn off at the top of the tanks flows into a reservoir, and the slimes are discharged into a launder through valves at the bottom of the tanks, and dumped on the ground.

From the reservoir the water is pumped back to an elevated tank of 50,000 gallons capacity near the mill, and is used over again. In this manner most of the water formerly wasted can be recovered. The pump used is a Worthington six-inch two-stage Turbine centrifugal pump, directly connected to a 50-horse power motor provided with an automatic starter, which automatically starts and stops the pump when the water level in the reservoir rises and falls beyond certain limits. To remove the coarse chatts from the settling tank they will use an endless rope haulage system, with an automatic dumping car running on a trestle. The rope is driven by a railway type motor (which holds about five tons) and dumps its contents at any desired point of the track, by means of a tripping device, which automatically opens a side door. A similar device closes the door when the car returns to take a new load.

The controller for the motor, and the valve for filling the car, are located on a platform, and the entire work of loading the car and operating the haulage can be conveniently attended to by one man.

The management expects that this place will enable them to remove their tailings at a very small expense for a long time to come. A considerable saving is also effected by recovering the water as previously mentioned. The plant embodies in itself a number of new and interesting features.

Mine Pump—Besides the plant mentioned above, the company has installed a new 18x36-inch Jeansville duplex compound pump, with a capacity of about 1,50 gallons per minute, at shaft No. 4.

Boilers—The old return tubular boilers at shaft No. 2 have been

exchanged for a battery of three 200 horse-power Heine water tube boilers. The heavy stream of water discharged from the mine pump at this place is led through a trench covered with grates in front of the boilers, and utilized for flushing ashes and cinders into a nearby creek.

At shaft No. 4 the old boilers have been replaced by four larger return tubular boilers.

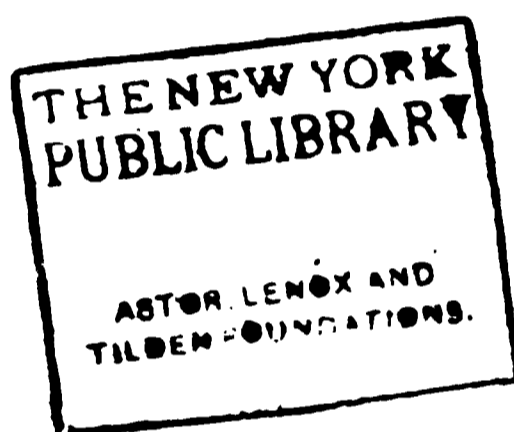
Electric Generating Plant—The electric generating plant at shaft No. 1 has been enlarged in order to furnish the necessary power for the new motors, which have been installed in connection with the tailings handling plant, and for a 75-horse power motor which takes the place of the 16 x 36-inch Corliss engine, driving the crusher plant. The mill engine, which is capable of developing about 650 I. H. P., but which develops only 240 I. H. P. when driving the mill alone, has been provided with a band wheel, and belted to a 225 K. W. D. C. generator, in order to utilize the surplus capacity of the engine. This generator will furnish power for all the motors and lights at shafts No. 1 and No. 4, doing away with the small, uneconomic generator sets previously used. In addition to this has been installed a 125 K. W. generator belted to a 12-inch and 20 x 36-inch Fraser-Chalmers-Tandem compound engine, and the necessary switch-board apparatus for generators and feeders.

The production, value of the same, machinery and employes, may be noted in the table under head of "St. Francois county."

ST. LOUIS SMELTING AND REFINING COMPANY.

This company owns what is known as the United States Survey, No. 1864 and No. 3092, comprising 1,295.53 acres of land, located between the Desloge and Flat River mining camps. It is capitalized at \$2,000,000, with its main office at 620 Frisco building, St. Louis, Mo. The officers of the company are, L. A. Cole, president; G. O. Carpenter, first vice-president; A. M. McChesney, second vice-president and treasurer, and G. C. Cole, secretary. The plant, perhaps the most elaborate of its kind, stands without a rival in the State. Electrical distribution of power was decided upon at the start. The power plant and mill are located at the same point at St. Francois, a station on the Mississippi River, and Bonne Terre Railroad. The several mines of the company are connected with the mill by a track of standard gauge, on which the locomotives belonging to the company are propelled by electricity furnished by the powerful electric plant operated by it. The mill has a capacity of 1,200 tons per day, and under one roof 176 jigs are *operated*. This mill is divided in so far as the jigs are concerned into *four sections, each of which can be run independently of the other,*





through a clutch pulley from main shaft. Detailed descriptions of this plant may be found in our report for 1902.

During the year the one large concentrating plant performed all work required by the three mines in operation. The three shafts leading to the mines have depths of 338, 391 and 407 feet. Seven boilers, fifteen pumps, two air compressors, three electric hoisters, six crushers and one hundred and seventy-six jigs embrace the machinery in use.

The output of the mines amounted to 31,022,000 pounds of lead ore. There were employed for the year 432 miners and 314 mill and other men, or a total of 746 men.

The underground conditions are uniformly found in a safe and healthy state. Ventilation extra good, and in fact great care is taken at all points to avoid mishaps and accidents, but this is largely the case at all the mines of this county.

The production of this company has been as follows:

Year.	Pounds.
For the year 1901.....	19,672,000
For the year 1902.....	29,128,000
For the year 1903.....	33,402,000
For the year 1904.....	31,022,000

MADISON COUNTY.

This county has been a producer of lead ore for more than 180 years. It has been worked on the surface and as time passed for many feet below. Not only has lead been mined, but copper, nickel and cobalt as well, all of which, except lead, largely going into the dump for many years, owing to a lack of facilities for economically cleaning and separating the ores. It has only been within comparatively recent years, that any attention has been given nickel and cobalt, but the introduction of modern methods and appliances for the economic recovery of the copper, nickel and cobalt, as by-products in the mining for lead, that their due importance has been fully recognized. Copper ore has been mined in the county for many years. More particularly at Fredericktown and on the old Mine La Motte property. The copper property near Fredericktown is now owned by the North American Lead Company, one of the shafts having been sunk not very far from an old shaft from which copper ore was extracted. It is not at all surprising to learn that cobalt and nickel are becoming quite an item in the production of the North American mine. With the demonstrated existence of these se

valuable ores found as they are at Mine La Motte, Fredericktown, at both the North American on the east and the old Catherine, now the Madison Lead and Land Company mines on the west, denotes their presence over quite an area of the county. This county has long held the reputation of producing more nickel and cobalt than the balance of the United States combined. Canada, under recent exploitations, develops large quantities of cobalt, and we are glad to note the possibility of this county largely increasing its output of this ore in the near future as an offset, and in enabling this State to hold its own in this production.

The erection of a refinery for the treatment of copper, nickel and cobalt by the Mine La Motte Lead and Smelting Company on its property, and which began operations in June, 1905, will stimulate the endeavor in this county to save the copper, nickel and cobalt associated with the lead in its mines. We have known of no nickel and cobalt which has been saved in recent years being sold aside from that procured at Mine La Motte. But now with the opening up of the new company, which is known as the Mine La Motte Development Company of New York, with its mine opened up, in what was years since called the "Copper Mine," and the finding therein of copper ore running a high percentage, together with considerable nickel and cobalt, an increase of these ores must result. The latter company has in its superintendent, Mr. Ullman, a genius and an untiring man in the pursuit of his duties, and he will get all there is to be gotten out of the land. Then, with what the other companies will produce, we may look for quite an increase in the production of lead, copper, nickel and cobalt for 1905. This county is mineralized from start to finish; we have seen the disseminated ore shot out of a shaft only 18 feet in depth; we have noticed a great fissure vein crossing a ridge virtually without prospect work being done on it, and yet at the creek where it crossed much ore was extracted.

The county must in time prove a great mineral producer, and the mere mention of what has been produced should of itself lead the prospector that way. Silver has been mined a few miles west of Fredericktown, nickel, cobalt, copper, lead, iron ore are now being mined, while its immense bodies of marble and granite are unexcelled anywhere in the State.

The county produced in 1904 the following:

Lead ore valued at	\$440,846
Copper ore valued at.....	5,056
Nickel, valued at	25,382
Cobalt, valued at.....	89,708
<i>Total</i>	<u>\$560,992</u>

ATTENTION TO ABOVE TRAVELER BOW LIFT IN JUNE 1911
Now in property of the Department of Land and Surveying at Washington M





The value of the 2,792,455 pounds of pig lead nor the value of the marbles and granites quarried and shipped have been considered, but are included in other tables. The description of the several mines will be found as follows:

MADISON LEAD AND LAND COMPANY.

This company is the successor of the Catherine Lead Company, it having purchased the land and plant of the last named, and operated the mines the last three months of the year just closed. The Catherine commenced the sinking of a shaft, and the construction of a mill in 1900. The mill was erected nearly two miles from the mines and an overhead tramway erected to convey the mined material to the mill, where it was crushed, cleaned and made ready for the market. This tramway, to be exact, was 9,150 feet in length, and in some places reached quite an elevation above the surface. The mill was placed where water was convenient, but in order to secure the same, the Little St. Francois river had to be dammed and a flume 1,800 feet long constructed to secure an elevation sufficient to run a turbin wheel, located just below the mill. For fear the water would not at all times prove of sufficient power to run the mill and supply the jigs, steam power was also provided to assist in the operation of the mill. The first shaft sunk encountered the ore at about the 100-foot level. Drifts were driven east and west in the ore body; the east drift was driven for quite a distance when it run into a fault. A shaft was driven at the fault and the ore found again 60 feet below the other run of ore. The west drift was worked for a short time when it run into soft ground filled with boulders of immense size. This soft ground, while it run a good percentage of ore, still it was of such nature as to prohibit drifts of any width and fearfully expensive to timber. It was inspected by me a number of times, as it was my opinion dangerous ground, and so stated and warned the foreman. Most discouraging conditions pursued the Catherine company, and it eventually went into the hands of a receiver. Mr. J. F. Franklin was appointed as such, June 23, 1904.

The receiver operated the mine a few days over three months, paying off some of the indebtedness and clearing \$5,500 during that period. In the meantime the Madison Lead and Land Company was organized and purchased the property, paying \$185,000 for it. Since this purchase, the present owners have drilled from fifty to sixty diamond drill holes, with, we learn, very promising showings. The capacity of the mill has been increased to just double what it was formerly, and a new 125 horsepower boiler installed. At mine No. 2 the quipment has been enlarged by the addition of a powerful Rand air compressor, with which numer-

ous air drills will be used in drilling the hard ground. An underground diamond drill has been secured with which the ground ahead of the drift will be tested, in order to avoid poor ground, and in feeling for the ore in various directions. This must result in great saving of time and money, as there is a vast difference in knowing just what to expect rather than driving expensive drifts blindly. Quite recently in driving a drift by contract, between No. 1 and No. 2 shafts, and while in good lime rock, the miners suddenly broke into a mud channel, that caused a cave-in from the bottom of the mine to the surface, resulting in a portion of the mine being filled with mud and boulders, which will require from 60 to 70 days to remove. Shortly after this channel was struck, the miners were greatly alarmed by the failure of the water to run. As an instance of the possibility that what we call our dumb animals, are after all conscious of the extra hazards of the underground work of a mine; it is claimed that after the shots had been fired that broke into this channel that the driver of a mule, accustomed to the work in this drift, could not force his mule beyond a certain point, but instead the mule climbed a stope of considerable elevation with his car, and refused to be moved. The driver, however, moved in a short time, without any urging, as he noticed the on-coming mud and boulders, making better time back to the shaft bottom than he had ever been known to make before. The mule refused to leave his position for several days, and was fed and watered where he made his stand.

It is predicted that the new management, in view of the care being taken by it, and the better facilities introduced, will make a paying proposition out of its property.

MINE LA MOTTE LEAD AND SMELTING COMPANY.

The property owned by this company has been known and written about for more than one hundred and eighty years. It is great in the number of acres of land owned (38,000), its numerous farms, milling plants, smelters, furnaces and other structures of various kinds. The management changed hands during the year, and it remains to be seen what the result will be during the current year under the new order of things.

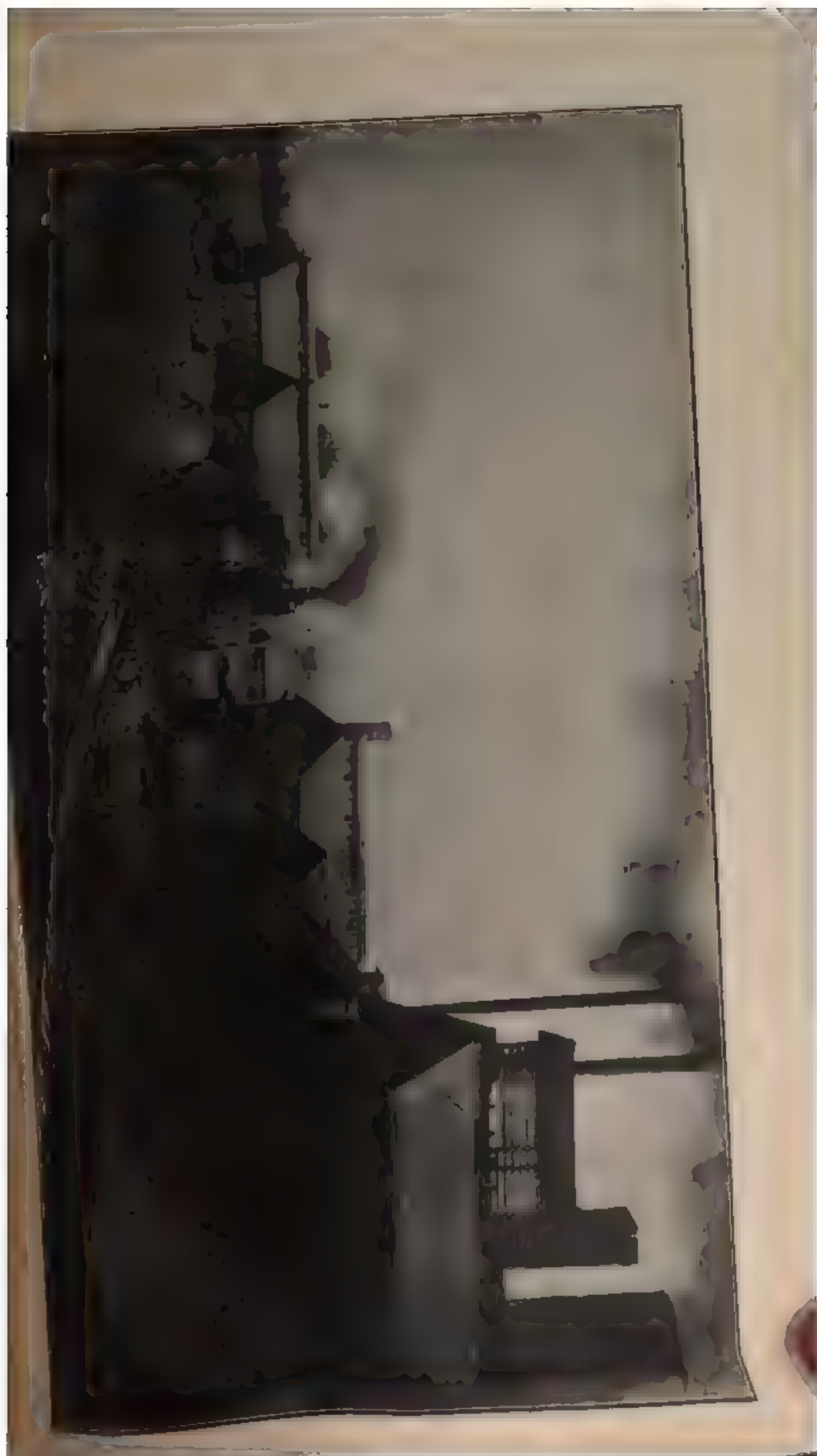
At the end of the year request was made of the company to furnish report of its business for 1904, on a blank which we enclosed. Several months thereafter the report was received, but the Secretary of the *Bureau*, who compiles these reports, did not find it clear enough for his purposes. Finding that a further change had occurred, we wrote Mr. S. S. Clarke, the new metallurgist of the company, to furnish a report, ex-

WOODS MOORE SMELTING PLANT, MADISON COUNTY, MO.



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ASTOR LENOX AND
TILDEN FOUNDATIONS



Aside from rents received from 110 farms, numerous dwelling houses, the sale of live stock from the ranch, store profits and the profits arising from the smelting of 2,792,455 pounds of pig-lead, the value of the several ores mined. was as follows:

Value of the lead ore mined was.....	\$115,504
Value of the copper ores mined was.....	5,056
Value of the nickel mined was.....	25,382
Value of the cobalt mined was.....	89,708
Total	\$235,650

The Mine La Motte Development Company is the only lease made by this company, a description of which follows:

MINE LA MOTTE DEVELOPMENT COMPANY OF NEW YORK.

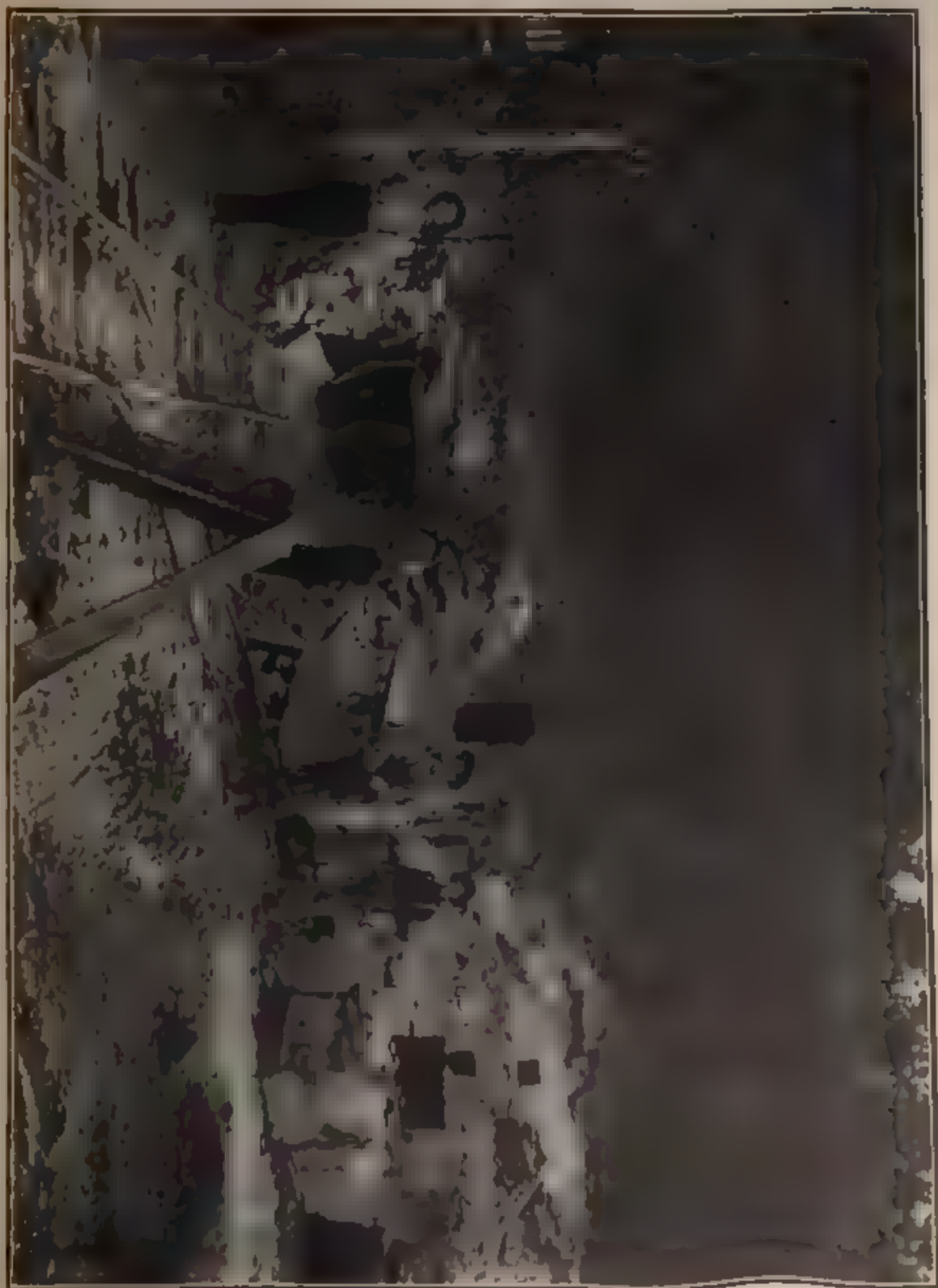
This company is organized under the laws of the State of New York, and is capitalized at \$600,000. Its officers are, William B. Dwight, president; James S. Dwight, acting secretary and treasurer, and M. J. Duryea, vice-president and general manager. It has offices in Poughkeepsie, New York, and Mine La Motte, Missouri.

The company holds a lease on 400 acres of proven mineral land in the southwestern portion of the famous Mine La Motte grant, embracing the copper mine known to all in that section as a valuable producer. The lease runs for 49 years with a renewal privilege of 40 years more, giving control of the property for 89 years.

The mine operated by this company is unique among the mines of this section in, that it is a tunnel or drift running in the hill-side, and the cars containing the mineral are hauled by mules directly to the mill, no hoisting being necessary. It has been worked, under primitive methods, since about 1825, and is considered one of the richest producers in the county. For years it was worked for copper, the ores being smelted in crude furnaces located on the banks of the Little St. Francois river. From these operations it derives the title "Copper Mine," by which it is known throughout the county. No work has been done on the property for the past sixteen years. The mine produces lead, copper, nickel and cobalt, assays made by the present management showing high percentages of all four minerals. As high as twenty-four per cent. copper has been found in samples assayed.

In November, 1903, the four hundred acres held by this company *was leased from the Mine La Motte Lead and Smelting Company by M. J. Duryea, the lease being sold by him to the Mine La Motte Development Company.* In April, 1904, work was commenced by the company

VIEW LA MOTTE DEVELOPMENT COMPANY, MADISON COUNTY, MO.



1

and was vigorously prosecuted, and in December the plant was ready for work.

During the summer and fall the old workings were drained and cleaned up and put in shape for active production. Large quantities of low grade ores were found in the mine and in the dumps, left by former owners. Fine faces of high grade mineral were exposed.

Two shafts were opened into the workings, being substantially cribbed with 2 x 6 oak planks spiked to each other. These give perfect ventilation to the two wings of the mine, making the air underground remarkably fresh and clear. The roof of all open workings was thoroughly tested and wherever needed heavy oak props put in, every precaution being taken by the management to make the mine safe and healthful for the men to work in. The workings are remarkably free from water. A 7½x7x10 Worthington duplex pump has been installed, which will throw out the accumulation of two or three weeks in less than an hour. Six Rand No. 2 D. drills are in use.

A mill of 300-ton daily capacity has been erected with an equipment consisting of one 16-inch crusher, one set of 36-inch rolls, three sets of 30-inch rolls, one five-cell rougher jig, one six-cell cleaner jig, one five-cell sand jig, classifiers and four Wilfley tables for handling slimes. The power is furnished by two 130 horse-power tubular boilers and one 14x36 Corliss engine. A ten-horse power vertical engine runs a hundred light generator, affording light for mill and shops. A Rand imperial compressor furnishes air for drills, pumps, forge, etc.

Fifteen ore trucks of special design carry the mineral from mine to mill. These are hauled to top of ore bin over mill, by a single cylinder geared hoist, up an incline one hundred feet long. A special dumping device unloads cars automatically, dropping the mineral on a grizzly where the boulders are broken in size for crusher. The storage bin will hold 175 tons, giving over one-half day's run.

A complete water system has been installed, consisting of a pump station on the Little St. Francois river, equipped with a 75-horse power tubular boiler and a 16x8½x12 Fairbank-Morse duplex pump, and a large storage basin, with an 18-foot earth dam. It is a distance of 4,800 feet from pump to basin and six-inch pipe is used to carry the water. From dam to mill there is a fall of 40 feet, which affords abundant pressure for fire service as well as mill operation.

Store houses, shops, etc., covered with galvanized corrugated iron have been built, convenient to mill, and an attractive office building erected. Seventeen dwellings have been built and work will be started in a short time on more, the company having plans in view for a little town with postoffice and store. A mile of wagon road has been built

from the Mine La Motte station of the Iron Mountain railroad and the company is negotiating for the construction of a spur from railroad to their mill. Though work on the company's concentrating plant was not begun until May, 1905, the mill has been producing concentrates for three months and shipments are being made with regularity to the smelter. Besides the lead concentrates shipped, the company has accumulated over two hundred thousand pounds of copper, nickel and cobalt concentrates.

M. J. Duryea has the entire management of the company's operations, with Alfred Uhlmann as superintendent.

The first product from this property will not be reported until the close of the year 1905.

NORTH AMERICAN LEAD COMPANY.

The company has a capitalization of \$1,000,000, owns 800 acres of land and one of the largest plants in the disseminated lead district of Southeast Missouri. Marked progress has been noted for each year of its existence, with such changes and betterments made as tend to increase the output of its mines and render the plant more efficient, and today we find it a model of its kind.

The officers of the company are Frank E. Stoneman, president and general manager; Nathan Gamble, treasurer, and Wm. D. McCullough, secretary, with general office at Fredericktown, Mo.

In the matter of improvements during the year, we note the installation of six new jigs, two four-compartment Hartz jigs and four three-compartment Hartz jigs; two new sets of trommels; additional settling tank for slimes, all of which are in operation. Two new switches have been constructed, one of which is made use of only in handling the chat output. The company now owns a 40-ton locomotive and four large chat cars. A new air compressor is at this writing being installed, which with the old one, furnishes capacity for 18 drills. While this district in which these mines are located has not thus far had serious annoyance from the water, the mine at this place having to handle not to exceed 100 gallons per minute, still the pumping by steam power is expensive. The company has just purchased and is making preparation to install a large Bullock 100 K. W. dynamo, which is to furnish power to meet driving three stage Worthington turbine pump of latest pattern. This last-named installation is saving not only furnishing power. The steam is. The company anticipates making a gain in the cost of labor as well. Besides furnishing power, the dynamo will also furnish the light in the mine to meet emergencies that may arise in connection with the main boilers.



sufficient to justify the erection of crude smelters. Lead ore mining commenced as far back as 1725, and has continued to the present time. No very deep mining has been done which has resulted in finding large bodies of ore; occasionally a fissure vein has been found along which shafts have been sunk. Other shafts of varying depths to 75 feet have struck narrow parallel channels, having a width of from three to four feet, carrying a run of lead which in some places run as high as six inches in thickness and from that on down to a sixteenth of an inch. When the miner reached a run of this nature, and was paid by the ton, they have made big money. The lead ores have been largely mined in the clays, but where crevices in the rock are found carrying the ore, they have been found to contain lead, zinc and baryta; occasionally caves in the rock are found in which a fine deposit of ore is secured. The sum total of the lead production in this county, however, has been great. Of late years the mining of baryta, or what is termed locally "tiff," has caused a shifting of the miners from lead to baryta; the reason assigned for this being the greater ease in finding it, and the much larger quantity existing when found. The ton of lead, while paying the miner more than ten times that paid for baryta, when found, yet the latter proves the more profitable in the end. This county produces by far more baryta than any other section of the State, and to such an extent has the demand for the mineral grown that an up-to-date mill has been constructed in the very heart of the baryta mining section of the county, which is producing a very superior article.

Iron ore is found at numerous points throughout the county, but the most serious effort thus far made to mine and smelt the same, was at a place called Hamilton, near the western border of the county. A furnace was erected which was called "The Hamilton Furnace," and the work just started when the panic of 1873 ended the enterprise, and no attempt has been made to revive the industry since. The ore within the last six months, however, is being mined, we understand, by its present owners, The Copper Mountain Mining Company, and hauled wagons to the Frisco railroad. That a serious lack of transportation facilities has retarded the development of the county very greatly, cannot be questioned. One has but to make the trip through this county, the Inspector and Secretary of the Bureau did in a spring wagon at beginning of the current year to discover the many prospects opened, not fully developed, to form a correct idea of the possibilities of the county, and the district is made easy of access. Unfortunately, many where the ore has been uncovered are found to be idle or visits them; but where the opportunity is cut off of water in the shaft to examine the ground, he cannot

afford to make statements based solely upon what he hears from those interested. So frequent was the reference made to a good prospect at this place, and that place, by the various interested parties, that when reminded of the very many unpleasant experiences along same line, that the word "Prospect" created a feeling of faintness and something akin to nausea.

The total production from the county for 1904 was: Lead, \$125,340; baryta, \$131,741; total, \$257,081.

ABBKEYVILLE MINE.

The Abbeyville mines are in township 40, range 1 west. The ore is found in a fissure vein on a 750-acre tract of land, owned by Mr. J. D. C. Lucas of St. Louis, Missouri. That much ore has been mined at this point, there can be no doubt, as not only the surface indications, but the remains of an old smelter attest. We visited this mine several years ago, but work was at that time suspended. We could not, however, account for its remaining idle with so much ore in sight, and with so fine a prospect in view. Taking a look at the old smelter we found stored there a large amount of ore; this, we learned, was disposed of during the year, and that a large amount had been stolen. Our visit disclosed this fissure vein opened to the surface, and a seam of lead along the east wall of the fissure that would average four inches in thickness for a distance of 200 feet. Beyond this point the drift or tunnel did not run, but several hundred feet further north and up the hill, the fissure had been traced by several shafts, in each of which the lead ore had been uncovered. No effort, thus far, has been made to discover the depth at which the ore may be found in this fissure; in the adjoining county, the ore has been extracted from similar fissures to a depth of 480 feet, with ore still in the bottom. In Spain, zinc ores are worked in fissures beyond the 4,000-foot level.

Our last visit to this mine, early in the current year, found a great improvement being made. A practical man was found in charge of the property, one of a family that has for a century been engaged in the mining for lead in this and the adjoining county of Franklin. Under the supervision of Mr. J. T. Burtle, good results are hoped for. He is sinking a shaft with the intention of drifting at the 100-foot level. The shaft is located some 300 feet south of the point where the drift was started up the hill in a northerly direction, and at the time of our visit was down about 80 feet. New engine and boiler house was nearly completed, which was equipped with a 40-horse power boiler, air compressor and a Freeman hoist. Aside from the sinking of the shaft, mining was being done, but active operations will begin with the comp

tion of the shaft and structures well advanced. We shall be disappointed if a good production is not made during the year 1905. This mine is but a short distance from the old Hamilton iron furnace, which went out of blast during the financial panic of 1873.

AMERICAN LEAD AND BARYTA COMPANY.

This company owns 26,000 acres of land, 25,000 of which are in Washington county, with the remaining 1,000 acres distributed in Miller, Morgan and Benton counties. It is capitalized at \$3,500,000, with its mining office at 208 Wainwright building, St. Louis, Mo. The officers of the company are John Morton, president, and Frank Morton, treasurer and secretary.

The products of this company for the year 1904 is as follows: 587,767 pounds of lead ore, 10,166,000 pounds of baryta, with a total value of \$34,344.

It is not possible to furnish the number of employes or the wages paid labor, as most of the mining is done by farmers, who work at their own pleasure, at numerous diggings and mines on the company's land. The company purchases the ore from the farmers, charging them royalty for mining on its land.

LOUIS BRENKE LAND.

Mr. Brenke, the owner of the land, postoffice address, Irondale, Missouri, has his mining property leased to the following parties: W. S. Townsend and G. M. London, who in turn have sub-leased to—

W. S. Townsend, Lokaski, Missouri.

W. H. Miller, Jr., St. Louis, Missouri.

H. S. Whitener, Flat River, Missouri.

G. M. London, Flat River, Missouri.

The number of acres of land leased is 200, and the capital invested thus far, \$4,000. One shaft has been sunk, having a depth of 75 feet, and an equipment embracing one steam boiler, one steam pump and one steam hoister. Ten men have been employed for 60 days, only, and the character of the work is that of development. The shaft is 5x7, and is sunk on what the operators term a channel; the opening between the sides of walls ranges from 18 inches to 24 inches in width and filled with clay and red ochre, the clay covering lead and a zinc carbonet. The shaft is sunk on this channel, but its length as yet is undetermined.

The product was necessarily limited, as the work thus far has been *confined to sinking a shaft*, with 11,000 pounds of lead extracted.

Z. F. HIGGINBOTHAM & SONS.

This firm is located at Fertile, and has for many years been engaged in the mining business. It, however, confines its business to the leasing of its lands for the mining of lead and baryta, purchasing these products from the miners and farmers after charging them a royalty on the mineral so mined. The firm controls 3,000 and owns in fee 1,800 acres. The mining is mostly done in sections 26, 27, 28, 32, 34, 35 and 38, townships 38 and 39, range 3 east. Much of the mining is done at shallow depths, one shaft passing through limestone and flint, after numerous efforts, finally reached a depth of 150 feet. Mr. Higginbotham informed me that he had a contract for 5,000 tons of baryta to be delivered during 1905 to one St. Louis party, while parties from Tennessee attempted to make a contract with him for 35,000 tons for the year 1905. The royalty paid by the miners of baryta will average fifty cents per ton.

The Higginbotham store at Fertile is the trading point for all baryta and lead mined and sold in the vicinity, and the nearest railroad shipping point is four miles east of Fertile on the Iron Mountain railroad. Nearly all minerals delivered to the railroad is handled in wagons carrying as a load from 1,500 to 2,000 pounds, the team consisting of a couple of very small oxen, at times so very small as to make one believe that the driver could carry in his pocket a milk bottle which would supply the feed for his team. The farmers and miners are not always so situated that they can make car load shipments; hence it is, that the store which will purchase 500 pounds of baryta, or ten pounds of lead, proves a great convenience to the farmers to haul what he has to the store and secure cash for it or trade it out in the store.

Several ore buyers transfer their supplies to Higginbotham & Sons, among them may be found Cruise Higginbotham, who is located at Higginbotham's mill. He runs a store and makes purchase of all minerals brought to him for sale or trade. This baryta and lead is mined on a 40-acre tract, owned by Higginbotham & Sons.

Murphy and Allen own 402 acres in township 38, ranges 2 and 3 east, on which miners work on a royalty of from \$7.50 to \$8.00 per ton of lead. The character of mining on this land is what miners term "skimming;" that is, shallow mining. This firm purchases the mineral from the miners, convey it to Cadet, where it is sold to Higginbotham & Sons.

Mr. P. S. Coleman, the postmaster at Racola, is the owner of 40 acres of land near Old Mines, and known as a part of the old Spanish land cession. Considerable lead and baryta is purchased at this point and afterwards disposed of to Higginbotham & Sons.

White Brothers, at Old Mines, sold to Higginbotham & Sons 122,000 pounds of lead during the year, which averaged them a very good price. The lead mined on this land last year was extracted from old mines worked here many years since. No men employed by the concern, work being all done on a royalty basis.

Following is the statement made by Higginbotham & Sons of their business for the year 1904:

Baryta.	Tons.	Value.
Produced on lands owned and controlled by Z. F. Higginbotham & Sons	1,848	
Purchased from other parties.....	2,775	
Total	4,625	
Total received for same.....		\$20,118 75
Lead Ore.	Pounds.	
Produced on lands owned and controlled by Z. F. Higginbotham & Sons	176,270	
Purchased from other parties.....	339,840	
Total	516,110	
Total received for same.....		12,663 30
Net amount received for both ores.....		\$32,782 14

Average price received by miner on dump for Barytes, \$2.00 per ton.
Average price received by miner on dump for lead ore, \$20.00 per thousand.

LONG & WHITE.

This firm has been in the mining business many years. Mr. Long, the senior member of this firm, went to Potosi in 1852. His first six years' service was with Col. Jesse McIlvane, during which period he did not lose a single day. His connection was severed with Col. McIlvane owing to the expiration of the lease under which the colonel operated. After this Mr. Long went into business, confining himself to mining, the purchase of mineral and smelting lead ores. Recently he abandoned the smelters, as the new methods proved such a saving over the old styled smelters, that the price paid for the ore by the modern smelter did not leave him the margin to justify a continuance of his smelting business. Mr. Long is 75 years of age, vigorous in mind and body and respected by all who know him intimately. His business career has been a successful one. He is president of the Washington County Bank at Potosi, and still actively engaged in the mining industry. Mr. Long was engaged in the purchase of baryta as far back as 1855 and 1856; at that time, however, it was mined in a very indifferent and desultory manner. The principal use made of baryta, or tiff, as it is called in mining regions, was in the manufacture of white lead. The

BAHIA MIL. AT MINERAL. POINT WASHINGTON CO. CALIF.



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last year Long & White sold 1,200,000 pounds of lead ore, and 24,000,000 pounds of baryta, valued at \$51,000.

The shipment of the above minerals at Potosi was through this concern only. The Federal Lead Company of Illinois purchases and smelts all lead ores handled by Long & White. Many of the small ore buyers of this district dispose of their holdings to this firm.

Mr. Long figures that the royalty paid by miners to land owners, for lead ore, to average about 20 per cent. We found baryta in Franklin county at three points, which was sold to this firm. At Anaconda, 283,000 pounds; at St. Clair, 1,160,000 pounds, and at Sullivan, 200,000 pounds.

One thing is demonstrated by our visits to Washington county, and that is much more attention is given to the mining of baryta than that of lead, which is a reversal of former experiences. The demand for baryta is greater than formerly, with a constant demand and the mineral much easier found and mined than lead.

PITTSBURG AND POTOSI LEAD COMPANY.

This company owns 604 acres of land about one-half mile northeast of Potosi, and is incorporated under the laws of Delaware. Its post-office address is Charteroi, Penn. The agent of the company, from desire, or otherwise, could tell us but little of the organization of the company, or the trouble existing, which appears to be recognized as a fact.

We learned that six men were employed for a time as miners, receiving \$1.35 per day as wages; that 350,000 pounds of lead ore were mined and 240,000 pounds of baryta, which sold for \$8,770. One shaft, 60 feet in depth, was operated during the year. The equipment consists of one steam pump, one steam and one horse hoister.

RED HEAD MINING COMPANY.

This company is as yet in the prospecting stage, its shaft having reached a depth of 70 feet. The company owns 3,300 acres of land, and is capitalized at \$100,000, with an office in the Equitable building, St. Louis, Missouri. Doubtless we shall have a good report from it for the current year.

This property is distant from Palmer, its postoffice, four miles southwest, which brings it close to the Renault property referred to.

RENAULT LEAD COMPANY.

The Renault Lead Company was at one time known as *Fourche a Courtois mines*. As far back as 1725 lead was mined on this property,

and since then a very large amount of ore has been extracted. The company owns a large body of land, embracing 10,824 acres, and located in township 36, ranges 1 east and 1 west. The officers of the company are Arthur Thatcher, president, and J. C. Howe, vice-president. The local postoffice is Palmer, Washington county, Missouri. The company does no mining, but grants to miners the privilege of mining, paying for the ore mined, at the mouth of the shaft, an agreed price for the ore per ton. Not in fifteen years has the product declined to the point reached in 1904. There was produced on this property in 1900, lead ore amounting to 2,419,000 pounds, while for this last year, but 163,461 pounds were mined.

At one time small smelters were employed in smelting the ores mined on this property; at present no machinery is in use by the company. We have been on this property when the miners, under agreement with the company to deliver the ore at the surface, have assured me that they had made as much as \$65.00 per week. The ore is mined from near the surface to the 150-foot level.

We will not attempt an explanation of the present inactivity, as some of the officers of this company are expert mining men of splendid ability and well known as such. One drawback, doubtless, has been its inaccessability to transportation facilities. Can it be that the company is awaiting the construction of the railroad in contemplation by the Sligo Furnace Company from Dillard in Crawford county to the 100,000 acre tract in Iron county, which will furnish iron ore for its great furnace at Sligo?

SOUTHEAST MISSOURI BARYTA COMPANY.

The owners of this property are John M. Campbell, J. L. Drunneller and E. S. Cornell, all of New York. Mr. Cornell is the president of the company. 2,005 acres of land are owned by the company, and all in this county. The local postoffice address is Tiff, on the Iron Mountain railroad, midway between Blackwell and Cadet. The improvements embrace the construction of 74 dwelling houses for use of the miners, a store room and office building, a side track to afford greater convenience in loading, and the introduction of a large traction engine and wagons specially constructed, which enables the company to haul from the mines at each trip 12 tons of baryta or lead.

There develops from our experience in moving around some of the Washington county baryta companies a disposition to withhold certain information relative to organization, prices and other matters that seriously interferes with a correct record of the industry. We trust that such concerns will avoid us the trouble in the future, as it will possibly

oid them trouble, in our future efforts to secure only such information the great majority of mining companies freely furnish us.

WASHINGTON LAND AND MINING COMPANY.

This company is organized under the laws of the State of Missouri, with a capital stock of \$50,000. It owns 6,250 acres of land, and is known as "Spanish Grant No. 2066, Washington County." Its officers are A. L. Shapleigh, president, and C. B. Burnham, secretary and treasurer, with office at No. 711 Wainwright building, St. Louis, Mo. No leases are made for mining purposes. Madley Brothers, with postoffice address at Bliss, Mo., have a first lease on the farming lands. These brothers have about 60 tenants on land covering about 1,400 acres, who cultivate the land, and when opportunity offers, they mine lead and baryta.

No mining now done could be dignified by the term shaft, as it is shallow pits where the mineral is mined. During the year there was mined 59,470 pounds of lead ore and 2,460,000 pounds of baryta.

The men who do the mining are paid for the baryta at the mines at the rate of \$2.30 per ton. The only improvement during the year was the construction of five log houses.

WHITE GLEN MINING COMPANY.

The home office of this company is at St. Louis, 604 Burlington building. The mine address is White, Washington county, Mo. The company owns 3,000 acres of land, and is capitalized at \$200,000.

There are four shafts on the property ranging from 40 to 60 feet in depth; at the time of our last visit, however, but one shaft was in operation, and this was at the time in an unsafe condition. The wire cable used in hoisting the tubs was fastened to the clamp enclosing the hook by a very small wire. The superintendent was instructed to suspend further hoisting until the cable was fastened securely after the manner suggested. The miners, mill and other men are paid wages ranging from \$1.10 to \$2.00 per day, with an average of \$1.50 per day. There is a concentrating plant made necessary by reason of the fact that the ore is not only found as free galena, but what the miners term rock-mineral, requiring crushers and jigs to separate it. The equipment embraces four steam boilers, six steam pumps, one air compressor, three steam hoisters, one crusher and seven hand jigs. The improvements made during the year consist of a concentrating mill, new 50-horse power roller, sinking of two additional shafts, installation of steam hoister, new drills and the construction of six houses for miners' homes. The output of the mines during the year was 500,000 pounds of lead ore and 1,000,000 pounds of baryta.

FRANKLIN COUNTY.

This county embraces an acreage within its borders of 644,240 acres. Mining for lead has been engaged in for more than a century, and very extensive operations and plants, costing large sums of money, have been employed in the lead industry in this county. Unfortunately very good properties have been made use of to further the schemes of designing men, who did not seek to do a legitimate business, but rather an opportunity to secure large sums of money which was squandered by them to the betterment of personal interests. Equipment altogether out of proportion to the demands of the company was purchased, in order that the graft contemplated might the more easily be acquired. The plans were deep laid, and carried out to the queen's taste. That the plans of these designing men might be covered without suspicion until their purpose was completed, foreign capitalists were sought and secured. These were preferred because distance aided in the delusion practiced at the mines. Great stacks of pig lead were artfully piled up in squares, the sides and top represented by the genuine pigs of lead, while the entire body of the square was constructed of dummies made of wood. When more funds were needed, an agent of the foreign stockholders would visit the mines and calculate the tons of pig lead on hand, estimating each pig to weigh 80 or more pounds as the regulation might provide, and report matters to the stockholders as in a most flourishing condition. This deception could not last always, and when the day of reckoning did arrive, it caused such consternation that all was abandoned. The smelter and fine machinery was allowed to go to rot and ruin, while the mines were allowed to fill up with water and falling material. This was a part of the experience in the management of the celebrated Virginia mine. This mine was on a fissure vein, with a number of shafts sunk at intervals along the vein, the work being easily followed today for a great distance by the dead ground in the dumps. The mine, had it been worked judiciously, would doubtless have proven a good paying investment, as there was a large amount of lead mined out of it. The excavations in this mine reached a depth of 480 feet. Several attempts have been made to revive this mine, but thus far without success. In recent years there has been no way open for inspection on account of its being idle. From first to last there appears to have been mined on this property from \$600,000 to \$650,000 worth of lead ore.

BELLEW MINING COMPANY.

This company owns the mineral right on forty acres of land, four and one-half miles south of Moselle, a station on the Frisco railroad, and in section 1, township 41, range 1 east. The company is organized under the laws of Missouri, and capitalized at \$62,000. There is one concentrating plant on the property, and equipment, consisting of two steam boilers, four pumps, one air compressor, two steam hoisters and two hand jigs. The production in 1904 was 2,066,422 pounds of lead ore, which sold for \$49,947.22. The company reports an average of 14 miners and two other help at the mines. Our last visit to the mine did not indicate a distribution of the force as reported. The number of miners in the ground compared with the force on top appeared altogether too small; in other words, we regarded it as top heavy. The mine should be a paying one, but judging from the figures furnished by Mr. Ross, the present manager, concerning the cost of sinking an additional 100 feet of shaft, under former management, it is plain to be seen that other considerations, rather than that of economy, prevailed. One of the chief difficulties in sinking a shaft is the amount of water to contend with, but from our observation of the amount of water made in this mine, this feature could not under the conditions have proven a serious obstacle. Wood was used as a fuel, it was in abundance, close at hand, with labor and teams furnished at a very small cost, still the cost of fuel represented 31.44 per cent., while labor called for 47.62 per cent.

At our last inspection of the mine we found in the bottom of the north drift, at the 265 feet level, a fine showing of lead ore, while in the south drift a bar was encountered through which the company had not at that time passed through. Such bars are frequently met with in fissure veins, but in turn unusually rich runs of ore are found, which is an offset to the lean places. We noticed two pieces of lead ore, at this mine, which had been crated and made ready for shipment to the World's Fair at St. Louis, that were five feet by four feet, and averaged between four and five inches in thickness. Unfortunately, they were not shipped, and are still at the mine. They simply represent the character of the ore run, which has been followed hundreds of feet vertically. The chief officers of a mining company, without practical knowledge or mining experience located in a distant city, should be very careful in the matter of practicing too much economy, as it is oftentimes a fruitful dividend slayer. Superintendents or foremen should be chosen, not with reference to the salary, but to their practical knowledge, honesty and activity. Fifty *twenty-five dollars a month additional* to what would be required by a

ordinary man would never be felt by comparison. Fissure veins of four feet between walls will not admit in any one level but very few men to work in them at one time, hence it is when the ground is proven several shafts should be sunk to the ore on either side of the concentrating plant, especially when the shafts encounter the ore at the thirty or forty foot level, or there should be several working levels on the single shaft, if a concentrating plant, with its jig men, engineer, fireman and hoisterman, to say nothing of fuel and other necessities are to be provided for. The few men on a single level, as we have noticed in some places, could not keep the mill supplied with sufficient material to keep it running a fourth of the time; the top men had to be on hand, but they, too, were idle much of their time. With the opportunity to keep the mill worked to its capacity, the cost of operating the mill would be reduced 75 per cent. Such mining is not only a waste of time and opportunity, but a positive waste of money.

FISHER BROTHERS.

The Fisher Brothers, located at Sullivan, in this county, have what we regard as a very promising prospect. No attempt during the year has been made to develop this ground, and we cannot understand why this is true. The prospect is in section 21, township 40, range 1, west. The outcrop of lead on the hill side was followed by a small drift into the hill for quite a distance, and work suspended when a piece of lead crossed the drift at right angles, which will weigh 10,000 pounds. Further prospect work here at small expense may prove the large piece of lead an altogether different run of ore from that followed by the drift. The Fisher Brothers are engaged in the merchandise business, and are not miners. We would not promise great results, as we can see no farther into the ground than others, but we would like to see this ground developed.

CAMDEN COUNTY.

This county has suffered perhaps as much as any section in Central Missouri on account of its lack of transportation facilities. Its isolation in this respect has greatly hindered and delayed systematic prospect work. In Swallow's geological report, published in 1855, where reference to the "Third Magnesian Limestone" is made, he states: "Iron ore of good quality occurs in this limestone. But the most important locality is on *the ridge in the forks of the Little and Big Niangua, extending from the mouth of the former to section 12, township 38, range 18. Lead was found in this rock in many parts of the State.* The mines at Erie and

in the Gravois are in it, as are nearly all of the eastern mines of the State. Copper, zinc and cobalt abound in this limestone in the eastern counties. This, in short, has been considered the metalliferous rock of the State; and, doubtless, contains more valuable ores than any other formation in our territory. Calcareous spar abounds in this limestone; and always, so far as my observation has extended, accompanies the lead ore, while sulphate of baryta has generally been found with that mineral in the second magnesian. Some of the grandest scenery in the State is produced by the high castellated and mural bluffs of this formation on the Niangua and Osage. In this county is to be found the Potsdam sandstone in inexhaustible quantities, the very best material for the manufacture of glass, cement and other articles for which pure sand or silex is used.

"The fourth magnesian limestone of this county carries, it is said, Hematite iron ore."

At the time of our last visit we found prospect work being carried on in section 8, township 39, range 16, on the Chas. Given land. Considerable lead ore has been uncovered in several shallow shafts, the ore in some places associated with baryta.

At Wm. Hunter's place, five miles northeast of Linn Creek, section 10, township 39, range 16, there were five shallow shafts, from each of which lead ore had been extracted. While we were in that section, this property was leased to parties who claimed to have the capital to thoroughly develop it.

THE GENNESSEE MINING CO.

This property is in section 16, township 38, range 17. The ore being worked here is in a fissure vein, several shallow shafts on the hill had struck some ore, but at the time of our visit the company was setting a churn drill on the side of the hill where a shaft had been sunk and zinc ore found. The fissure appeared to us as having a slight dip to the east. This being true and the drilling to commence in the bottom of the shaft, will not furnish the information, we fear, the company hopes to obtain unless the drill after it passes the confines of the fissure, is pulled up again farther east. There are a great number of places in the county where iron, lead, zinc, baryta and onyx may be found. The place, however, for exploitation in this county, in our judgment,

is in section 32, township 37, range 16. Here may be observed "Peg-mill," the puzzle of every geologist who has visited it for years.

Not the space to enter the subject, but it is on Mr. Sam Wheeler's

place, and he, being an excellent gentleman, will gladly furnish all

information. He sunk a 30-foot shaft on the crest of the uplift,

passing through mica schist, graine and quartz. A short distance northwest of the above-named shaft some shallow shafts were sunk, from which a considerable quantity of what is termed a complex ore was found, composed largely of zinc and lead, with some copper. The particles of ore are so small and so interwoven as to make its separation very difficult without some new method being discovered. On the old dump we could plainly see copper, lead and zinc.

The great natural park at Hahatonka, so long noted for its picturesque beauty, and which Congressman Shackelford brought into still greater notice in his effort to get the Government to purchase the property and make a National park of it, will be the means of attracting attention to this county and to its mineral possibilities. When at this place recently, we noticed an extensive excavation in the solid rock of a pinnacle, which rose almost perpendicular above Hahatonka lake to a height of 325 feet. Upon inquiry we found that Mr. R. M. Snyder was to erect a six-story stone building at this point. Some claimed it was for a residence, while others said it was to be a hotel. Men were at work grading a road, and from its appearance and slope given to a certain side of the road-bed, where a curve was encountered, rather suggests an electric line or a standard gauge railroad. From this high building one can take in the great beauty of the gorge below and that wonderful spring, 100 feet in width and 12 feet in depth, gushing out of the mountain, and forming the beautiful lake until its waters empty into the Niangua river. The wonderful caves, miles in length, in which onyx columns 35 feet high and 15 feet in diameter are found, several natural bridges, the great coliseum, which it is claimed will seat 20,000 people, and where a whisper can be heard from one side to the other, is in a depression 200 feet below the surface. In fact, there is no part of the 2,600 acres owned by Mr. Snyder which will not be made easy of access and every foot of it found to be interesting and attractive. The work of building driveways, the building of a splendid hotel and a railroad to Lebanon on the Frisco railway was being pushed when we were on the ground. Such an attractive place is certain to bring men of means to this county and systematic mining will follow. The Niangua Mining Company owns a property in section 33, township 39, range 18, where a fissure vein has been followed, and it is thought from samples secured that as soon as the water level is reached that the ore will run into zinc blende. The present high prices paid for zinc ore should induce the owners of this property to again open it up, but here as elsewhere in the county *transportation facilities* have been the great drawback. The contemplated *extension of the Bagnell branch of the Missouri Pacific railway through*

this county would prove a blessing, and happily there is every prospect of the early completion of this branch road.

COLE COUNTY.

Lead and zinc ores have been produced in small quantity in Cole county for many years. In the central and southern parts of the county numerous prospect shafts and drill holes have been sunk, many of which disclosed the presence of these minerals, and associated with them in several places, where some development has been made, is considerable quantity of baryta. The latter mineral is of excellent quality and there were mined and sold \$2,223 worth of this product during the year 1904. There are five producing mineral shafts in the county and the lead mined during the year was 120 tons valued at \$6,654, making a total value for the two products of \$8,877. While the county may never rank high among the great ore-producing counties of the State, the future will no doubt witness a material improvement in its mining industry and mineral output.

At Elston ore bodies of sufficiently promising aspect were uncovered to justify the erection of a 150-ton daily capacity concentrating plant by the Elston Mining Company. The prospect is most excellent and the company deserves the success which appears to be in store for it. The mill was built since January, 1904, and the output could have been largely increased had development work progressed to the point of furnishing more material for the mill. The machinery of the plant embraces two boilers of 100 and 90 horse power respectively, one engine of 60-horse power, with Cookson feed water heater, two Sampson hoisters and three large pumps. The company has a commodious office building and weigh house combined, conveniently located with reference to both mine and mill.

The officers of the Elston Mining Company are as follows: C. H. Law of Chicago, president; J. R. Alcock of Chicago, vice-president, and C. W. Alcock of Chicago, secretary and general manager.

THE JEFFERSON DEVELOPMENT COMPANY.

A comparatively new mining company is operating in the vicinity of Centertown, having erected a most complete concentrating plant with other equipment, which makes it the best plant in the county. Its mine at our last visit was being worked at the 70-foot level and there was considerable lead ore in the bins, and a large quantity of baryta had been produced. An examination of machinery, shaft and underground work showed everything to be in a safe and satisfactory condition. *Next report will furnish information as to product.*

THE EASTERN STAR LEAD AND ZINC COMPANY

Are operating some two miles distant from Centertown. The officers of the company are C. H. Laws, president; F. W. Bossie, vice-president; Henry Bossie, secretary and treasurer, and G. E. Hughes, foreman. The company owns 75 acres of land, including 40 acres of mining land, known locally as the Streit land, upon which its lead and zinc mine is located. Six men are employed by this company at present. The company has opened up very promising ore deposits and will have soon increased its facilities and working force. There was considerable mining done on this tract of land several years ago. The Eastern Star Company has been doing much prospect work and a very encouraging amount of lead ore has been extracted during the progress of the work.

Mr. Urban of Centertown has been very active in prospect work in that vicinity and now has two coal deposits open and in active operation. One of these is near Centertown and the other is about half way between that place and Elston.

The Independence mine at Henley has lately been doing some prospect work which shows that the ore continues in encouraging quantity, and hope is entertained that further development will disclose lead ore in greater abundance.

Besides the lead, zinc and baryta found in Cole county there are many valuable clays of broad and deep extent which are bound to attract attention of men engaged in utilizing such products. Brick, pipe and potter's clay are of common occurrence in the county, and white and blue clays resembling kaolin and fullers earth occur in the vicinity of Jefferson City, and in other parts of the county. Considering the excellent shipping facilities in the county, it is evident that the clays of Cole county have never had the attention which they should have commanded.

CRAWFORD COUNTY.

This county is at present the largest producer of iron ore in the State, having to its credit an output during 1904 of 51,000 tons. Since 1878 the Cherry Valley mine, now controlled by the Sligo Furnace Company, has been a constant producer, the product amounting to \$1,794,339 during that period. Our data prior to 1878 we find too uncertain for use. It is known, however, that a blast furnace was erected in the county by Mr. Massey in 1828 and was still in operation in 1855. The Sligo Furnace Company, in successful operation at Sligo, Dent county, controls the above named property, smelting the entire product of the mine. There are several other mines in the county which have

produced large quantities of ore, but at present the Cherry Valley is the only mine now operated. In nearly all of the iron ore mines of this county much copper has been found, but so far not in quantity justifying its separation. A good authority on copper ores has lately given it as his opinion that possibly prospect work below the worked out level of the old iron banks may demonstrate copper ore in greater quantity. There has been a production of lead ore in this county for many years, but never at any time in great quantity. Surface indications are numerous, and our last visit which carried us from Steelville entirely through the county to Potosi, could have been extended for weeks, had we the time to visit the numerous prospects which we were invited to visit. With increased transportation facilities, the prospecting, which at present should be carried on, will come with the more comfortable methods of getting on the field, but then the early bird will have lost his opportunity.

The copper mine in this county, now being developed, is described in connection with our long article on copper, and the following statement is made to furnish details:

MISSOURI COPPER MOUNTAIN MINING COMPANY.

This company is capitalized at \$1,500,000 under the laws of the territory of Arizona. It owns in fee 7,462 acres of land in Crawford and Washington counties and is officered as follows:

L. M. Barnard of Sedalia, vice-president; W. B. Scoble of Sedalia, secretary; J. W. Graham, treasurer, and H. H. Graham, manager, Sullivan, Mo.

During the year this company was engaged in the further development of its property and smelting the ore derived from its prospect work, there being sold 17,241 pounds of copper, for which it received \$1,839.89. There was estimated to be 800,000 pounds of material in the dump, which would average 5 per cent ore when the year closed. The company has two iron mines opened, but no shipments made at the close of the year. In our article on copper other features associated with this mine have been dealt with. Five shafts have been sunk, 30, 45, 60, 108 and 120 feet deep, respectively. The equipment consists of one mill and smelter, two steam boilers, a steam pump, double engine, one Blake crusher, four steam jigs. There were employed 14 men at wages averaging \$1.50 per day. There was added to its equipment during the year a log-washer, one set of elevators, three sets of sizing machines, one hydraulic classifier, one Wilfley table, one 34-ton smelter, Frazier and Chambers' make one soot blower, two sets of rolls, one water tank, two mules, wagon barn and new residence. The current year finds the company shipping iron ore to the St. Louis Blast Furnace. Leases have been made

on its lead property to W. Allen, Allen & Karnish, John Allen & Co. and J. W. Wright. These lessees have shafts on a fissure vein which is carrying a good run of lead. The work now being done in the copper mine is in an open cut, but two feet of stripping, until they reached material carrying 4 per cent ore.

DENT COUNTY.

This county is seldom referred to as a mineral producing county. The facts are, however, that it has produced very large annual outputs of iron ore, much of which has been shipped, while a still larger quantity has been furnished the smelters in the county. More attention is due the county than it has received, if for no other reason than for the location of the finest furnace in the State.

SLIGO FURNACE COMPANY.

This company owns a great body of land in Crawford, Dent, Iron and Madison counties, amounting to 240,000 acres. The land being purchased in great quantity, not only to furnish the iron ore, which may be needed for future supply of a furnace of such dimensions and capacity as that at Sligo, but to furnish the wood needed for charcoal iron, which it manufactures exclusively. It is said that this furnace company will cut the wood off of 5,000 acres annually, hence the necessity for an immense territory. In order to reach this territory for its iron and wood, a railroad (standard gauge) is contemplated which will commence at Sligo and terminate in the county of Madison. Some 15 miles of this railroad has been constructed, its present terminus being Dillard, a point near the Iron county line. With the completion of this road, the furnace company will cross the Iron Mountain branch of the Missouri Pacific and add another main line to its transportation facilities, it already having an outlet over the 'Frisco line. The country through which this proposed line will pass contains much iron ore, and the road will intersect a section of the country which has produced much lead ore. This lead ore region referred to has been greatly retarded heretofore, because of the serious difficulties encountered in hauling long distances, over a very rough country. The asbestos found in Iron county will doubtless be thoroughly prospected and the facts as to quality and quantity be demonstrated. The furnace operated by the company while on the site of the old furnace operated many years ago, is virtually a new one, having a capacity of 100 tons of pig iron each 24 hours. Furnaces, boilers, in fact everything connected with it, is of the newest and best pattern. The great savings made from what was for-

merly absolute waste material, in the running of this present furnace, must go a long way in the payment of running expenses. The old style furnace with an open top permitting the gases from it to escape, has given place to an up-to-date modern furnace, with a blowing engine of 400 horse power and a capacity of 250,000 cubic feet per minute. This engine now forces what was waste gases from the furnace through pipes which conduct the gas to different boilers, where it is used as fuel in making steam. The saving made in the by-products resulting from the burning of wood into charcoal is of itself a very large item and was formerly a complete waste. No feature in the running of this large plant, wherein a saving might be made, has been lost sight of by the management. A charge for the furnace embraces the following materials: Two buggies containing 40 bushels of charcoal, two charges running from 1,500 to 2,000 pounds of iron ore, 200 pounds of lime rock and 60 pounds of manganese from the Indian Territory. From 190 to 200 of these charges are run every 24 hours. The assays of the iron at this furnace are vastly different from what they were some years ago. The laboratory reports of casts made in each separate bed are taken each day and for each cast. An order for pig iron does not permit a variation to exceed one-tenth of one per cent. The following is a copy of one of the chemist's reports handed to the writer at the time of his visit:

CHEMIST'S REPORT—SLIGO FURNACE COMPANY.

Sligo, Mo., May 5, 1905.

Time of Cast.	Cast No.	Bed No.	Silicon.	Sulph.	Mang.
91 m.	2305	1	1.32	.012	.94
		2	1.82		
		3	1.82		
		4	1.84		
		5	1.87		
		6	1.89		
		7	1.91		
		8	1.98		
		9	1.98		
		10	1.98		
		11	1.82		
		12	2.03		

The iron used in the manufacture of car wheels is received under **strict regulations**. A variation of one-eighth of an inch of difference is rejected. The company has been using two and one-half million **lbs of water each 24 hours**. Two pumps, one for use at the furnace

and one at the alcohol plant, were being installed while we were at the furnace. These two pumps will furnish the extra 5,000,000 gallons of water which it is thought will be needed in a short time. A 700 horse-power Sterling water tube boiler is in service at the furnace and a 600 horse-power boiler of same make is in use at the alcohol works. The fuel used under these boilers is the waste gases from the furnaces, which has been corralled by modern appliances and made to economize the cost of hoisting five millions of gallons of water each day. Such gases are no longer a waste or worthless element, but a valuable economic factor.

The electric light plant at the furnace consists of 24 arc lights and 560 incandescent 16-candle power lights. This same electric plant has the distinction of having been built for the battle ship "Maine."

The immense amount of water used at the alcohol plant has been allowed to flow off into the creek near Sligo, but objections being made that this water was killing the fish in the streams, the company was engaged in sinking a shaft some 90 feet deep into loose ground, in the hope of disposing of the vitiated water.

As we approached Sligo on the morning of our arrival we said to some passengers that we did not expect to strike a circus down there, but it soon dawned upon us that there were altogether too many tents for a circus. What we at first took to be tents turned out to be charcoal kilns: each one of the 72 kilns were round, with an oval top, white-washed with some substance and having the appearance at a distance of just what we took them to be. These kilns are built in rows, there being six of such rows and twelve kilns in each. A railroad track runs between each two rows, which is elevated on trestle work to just the right height to permit unloading of the wood from the flat cars into the top of the kilns. Each one of these kilns has a capacity of 60 cords of wood, and some idea as to size can thus be arrived at. In the construction of the 72 kilns 4,000,000 brick were used, while the trestle work of the railroad leading to and between them required in its construction over 1,000,000 feet of lumber. Adjoining the kilns is located the alcohol plant embracing the high trestle platform, on which a number of copper tanks are installed, then follows the still house. This building is an extensive one and used not alone as a still house, but for other purposes which we shall mention. It is understood that it is the smoke from the wood being burned in kilns, in the process of making charcoal, that is utilized in the manufacture of wood alcohol. Fires are started in the kilns and the smoke is caused to escape through a chimney, until the fire is known to be thoroughly started. The chimney is then closed and the smoke conveyed down to a central flue, which in turn passes the smoke into a system of *condensers*, and through which it is caused to pass from one to

another. These copper condensers alone cost \$35,000. After this condensing process the result is from one to one and one-half per cent alcohol, from 6 to 7 per cent acetic acid, and from 7 to 8 per cent wood tar. Acetic acid, as a by-product in the manufacture of wood alcohol, is used in the manufacture of an element entering largely into the composition of smokeless powder. This company now has installed powerful machinery with which it is hoped it will successfully accomplish the treatment of this acid, as we understand the market for it at present is without limit, and necessarily the margin of profit must be a wide and rich one. In the still house all impurities are removed, and the alcohol at 98 per cent pronounced chemically pure. All tanks in the still rooms are made of one-four inch copper. The other by-product, wood tar, is used as a fuel and the residue as a gas under the boilers. The product of the alcohol plant has averaged about 450 gallons per day of 24 hours. The barrels used in the storage and transportation of the alcohol have to be prepared with great care, with an average of one-half gallon of glue used on each barrel.

HOWELL COUNTY.

This county, so noted for its growth of the big red apple, possesses other features which with time will make it still further noted. The extensive deposits of zinc carbonates, iron ore and the pyrite beds will in the future most surely be worked with profit. We say future, because of the unfortunate conditions existing in the county at present. The citizens of West Plains contributed liberally for the location and erection of an oxide plant at their place. This plant was equipped with excellent facilities and a good business was built up and the plant satisfactorily operated until a trust, having its home in New Jersey, put in an appearance. It purchased the property, together with some ore property, and at once closed the plant. The good people of West Plains placed their money in this enterprise in good faith and for a good purpose. The oxide plant employed quite a number of men, and the number of drivers and teams arriving each day from the mines with ore added materially to the business activity of their progressive little city. The closing of the plant, however, was like throwing a wet blanket on the hopes and enterprise of the place. The citizens lost not only their money contributed to the enterprise, but the business which had been stimulated by the oxide plant. The only work now at this plant is an occasional painting of the structure and the smoke stacks; a simple reminder that if the citizens but quietly lay down and behave themselves that some time in the dim future, when it suits the convenience of the trust, it may

again put the machinery in motion. At the time of our visit there were indications of a revival of the carbonate mining, while considerable activity was witnessed in the mining of iron ore.

THE 'FRISCO ORE MINING COMPANY.

The mine is situated within a short distance of West Plains. It has connection with the main line of the 'Frisco railway by a switch one-half mile long. Some 15 acres of a brown limonite iron ore has been demonstrated by cuts and drill holes. The ore being handled at the time of our visit was simply the ore secured from old dumps, from 60 to 100 tons of ore daily being secured by a washing process. The ore is taken from the dumps over a tramway, mules being the power employed; it is then hauled thus to "log washers," where the dirt is removed from the mineral, the dirty water being carried to the rear of the washer, while the ore is conveyed to a screen where it is separated into four sizes; from thence into jigs, which separates the flint from the ore, the latter being transferred direct to the railroad cars. The larger pieces of ore are picked and thrown into a belt conveyor which deposits it also on the railroad cars. The company was at the time drilling for water, of which there appears to be a scarcity, although several previous drill holes had been sunk for the same purpose. One hole sunk to 150 feet and another to 400 feet failed to meet the requirements. The ore thus far mined has reached the 70-foot level. There was at the time of our visit 750 tons ready for shipment. The output from this mine for the current year should make a production of at least 20,000 tons. This plant as now rigged, has a capacity of 100 tons daily. The ore body as tested indicate many years of work. Other mines owned by the same company at Anderson, Clark's and also in Christian county are being operated. The carbonate mines in this section are as follows:

Rex Mining Co., 16 miles southwest of West Plains; J. P. Hay of St. Louis, president; J. C. Kingsburry, secretary and treasurer; Geo. J. Packham, vice-president and general manager.

The company is incorporated under the laws of Missouri for \$96,000. It owns the fee to 120 acres and controls a lease on 55 acres additional. During the year the work was confined to development only. There were 4,000 tons shipped to different smelters and some to the oxide works at Joplin. The strippings (as most of the ore in this district is in open cuts) runs from the surface to four and five feet in depth.

One of the peculiarities of the ore of this company is that it is encased on all sides by iron ore. This ore runs about 42 per cent. The "Steel ore" found on this land comes from a shaft 105 feet in depth; *carried down to 89 feet, the jack then followed to the bottom of the shaft,*



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It looked as favorable as at any other depth. Two drill holes, sunk far from this shaft, showed good ore from 100 to 150 feet level.

At the Rex mine as much as 30 tons of ore has been taken out in a day with only four men at work.

The old Alice mine, just across the line in Ozark county, now the property of the trust, has piled up between 11,000 and 12,000 tons of carbonate.

The G and G mine—This mine was a good producer, but apparently at blind; recently, however, further development has uncovered more than was ever before noticed at the mine. This mine was sold about 50 years ago at auction for only \$600.

The ores of this section, it is claimed, have proven the best for oxide purposes of any ore found in the State.

Beds of pyrite of considerable dimensions have been demonstrated to exist within the city limits, and also three miles distant from West Plains, so we were informed.

JEFFERSON COUNTY.

The authentic history of mining operations in Jefferson county date back to the discovery of the Valle mines in 1824. From that date, with the exception of an interval during the civil war, ore production in greater or less quantity has been an annual occurrence.

For many years the Valle Mining Company has operated an old Scotch Eye furnace, a cut of which may be seen in this report.

The company is incorporated under the laws of Missouri for \$200,000, and own over 5,000 acres of mining land in Jefferson and St. Francois counties. It does not do a mining business, but operates its smelter and leases its lands to miners, from which it purchases the ore produced. Up to the present time the miners have produced 84,391,846 pounds of lead ore and 158,414,000 pounds of zinc silicate, besides baryta, valued at \$3,060,284.

There are fifty shafts on this property from which ore was produced during the year 1904, and 86 miners and 22 other employes were engaged at work. The product reported for the year was 236 tons of lead ore, valued at \$12,272; 1,475 tons of silicate, valued at \$17,700, and a quantity of baryta, valued at \$2,780, making a total value for the three products of \$32,752. The total ore production of the county, which embraces the small amounts the farmers mine at leisure times, is reported to be valued at \$46,792.

One of the peculiarities of Jefferson county is its production of zinc. In the adjoining counties lead is mined, but no zinc ore worthy of note. The zinc ore mined here consists mainly of carbonate.

MILLER COUNTY.

A small amount of lead ore is mined each year in Miller county. The mining efforts in the county have never been on a scale of sufficient dimensions to fully demonstrate the exact mining conditions which obtain in this county. Surface indications are not wanting in the county to suggest the possible presence of considerable mineral and give encouragement that the production of lead and baryta may be developed into quite an item of importance. Until recent years the lack of transportation facilities was a barrier in the way of mining operations, but as matters have been improved by the building of the St. Louis and Kansas City branch of the Rock Island system, there has been a marked revival of prospecting and mining interests in the county. There are at present two shafts in which lead has been developed, and during the year 1904, 30 tons of lead ore were mined and sold for \$1,500. There is one good mill in the county and the output will no doubt be very materially increased during the current year. Besides the occurrence of lead, a very excellent quality of baryta is found in Miller county, and the mineral seems to be of sufficient quantity to justify the belief that its production will at no distant time become of much importance.

A clay, resembling kaolin, occurs quite abundantly in the county. This product has many valuable uses and add greatly to the future possibilities of that district. This clay is particularly pure and plentiful on the Holtzhoover place. There are numerous other clay beds of depths and extent in this county, the value of which will only be revealed when money and enterprise have dragged them forth into commercial uses.

MONTEAU COUNTY.

This county has long been known as a producer of lead, coal and baryta. It has only been within a few years, however, that it received much attention, and when this attention was received, it was so overwhelming and so disappointing in its subsequent results, that it proved a hindrance to the more extended development of the county. The fortune excitement grew out of a deposit of lead and zinc ore of very high grade which proved to be of exceeding productiveness until its unfortunate feature being that, unlike Jasper county, a deposit was not so easily or readily found. The facts of the Fortuna mine are: The mine, if opened up with rating from a purely mining standpoint, avoiding all

RAILS, SOUTHERN RAILROAD CO., MILLER COUNTY, MO.





speculative features, would have proved just such a business proposition that any intelligent business man would jump at. Had the parties who made the purchase of the 120 acres for \$10,000 concluded to exploit, develop and operate the mine themselves, the shaft would not have cost \$2,000 to sink it, and so far as development work was concerned, it cost nothing, as the shaft went into very rich ore which paid its way. A plant ample for all purposes could have been installed for \$8,000. This shows an outlay for land, plant and the opened mine of \$20,000. There was a production from this deposit amounting to \$175,000 in eighteen months. These gentlemen would have had the farm left and \$100,000 to divide between them. There are mines which would not show a profit like this, but there are mines much less rich than this one which have made a larger profit than we have estimated. If this mine had continued in existence and operation for the average life of zinc mines in Jasper county, as some have estimated, it would have produced \$583,320. One object of presenting this case as we have, is to draw the comparison between a legitimate mining business and the manipulation of the same property by speculators. One party puts up \$20,000, gets it back with the farm and \$80,000 to divide, while the speculator sells a million of stock, the stockholder suffers loss and so does the county by reason of the miserable failure. No one can say that other fine deposits do not exist in the county, for others have existed and still others exist. The mines opened up northeast of California give promise of a much larger yield of both zinc and lead than thus far demonstrated. When the proper machinery is introduced in the development of this property, it will be found that the waste, which has heretofore been treated as such, will carry much valuable ore. The surface indications point to a circle at this place, and we know of no other prospect in the county where exploitation furnishes more hopeful signs of good results. We may be mistaken, but if men must prospect, this occurs to us as worthy of trial. Lead mines still further from the county seat were about to be opened up. From what we learned from very reliable parties, the prospect would appear a good one. The old "Simpson Coal Bank" was visited the current year and it will be properly noticed in the report for 1905. When there it was found that the Monarch Mining Company had secured control of the property and had put in a concentrating plant and built a number of houses for the miners. This is a deposit of coal which has been mined for years and a large amount extracted. coal has been mined from near the surface to the 40-foot level. It appears to be incased on top by iron ore and iron pyrite. The coal at quite an angle with a dip of 45 per cent; large cracks in the same filled with zinc ore in one part of the cut, while at other places lea-

found. It is because of the large amount of lead and zinc found here that the concentrating plant was put in. It is claimed that there is another large pocket of coal adjoining the one being worked; this is quite possible, as miners usually after working out a pocket of coal in Central Missouri look for the twin pocket, which they always find, sometimes it is the largest one and at other times the reverse. It is a most attractive place to men interested in mining. One may at times pick up a piece of coal and on the same lump find coal, lead, zinc, pyrite and iron; this, however, is the exception, as the coal is of a fine quality of the cannel variety and secured the first premium at the Chicago Columbian Exposition. The unfortunate feature associated with this coal is its distance from railroad transportation, it being some eight miles to the Rock Island System. Both north and south of California small mines are opened in pocket coal, in each of which the presence of zinc ore is so abundant as to make it almost useless for domestic purposes. The methods thus far attempted in the separation of the two minerals are so crude as to make it virtually impractical. Some day it is hoped that improved facilities will render these pockets very valuable. Mr. Moesch of California has on his place, within a few miles of the city, several pockets of coal which carries considerable zinc, the development work, however, is not extensive. He also has a deposit of clay, resembling china clay, which will, with the increased uses made of these clays, possibly command a good price in the near future. Mr. Meusch has an individual collection of minerals and mineral specimens, which is a credit to his county and himself.

The county produced during the year 426,000 pounds of zinc ore; 374,000 pounds of lead ore and 86,000 pounds of baryta, which sold for \$19,402.00.

MORGAN COUNTY.

This county has been a mineral producer for a number of years. Lead, zinc, baryta, kaolin and several valuable clays have been reported to her credit. During the year 1904 lead and zinc ores were being mined from four shafts, and the product was 190 tons of lead ore and 90 tons of zinc ore, which were sold for \$13,120. There is one fully equipped cement mill and three hand jig plants in operation in the county. Interest in more extensive prospecting and development is increased. Coal occurs in pocket formation in several places and is mined in varying quantity for many years.

Commercial value in this county have attracted much interest and are now receiving the development of which they seem

so eminently worthy. A new company, the Versailles Fire Brick and Clay Manufacturing Company, began operation during the year 1904, and to this company we are under obligations for the following valuable information concerning the clay deposits and equipment of the company for producing and manufacturing the product:

CLAY DEPOSITS.

1st. A red surface or gumbo clay, lying pretty generally over the whole tract of land of from three to six feet in thickness, very rich and plastic in nature.

2nd. A white plastic fire clay going down to unknown depths and standing high heats without perceptible deterioration, and burning snow white when not mixed with coloring pigments.

3rd. A deposit of some 20 or 25 feet of green clay, pronounced by experts to be a high grade of "Fuller's Earth."

4th. An unlimited amount of what is known as flint fire clay of the most excellent quality. This clay is an absolute necessity in the manufacture of the highest grade of fire brick and wares.

5th. An extensive deposit of white kaolin or china clay.

6th. An unusual amount of potter's clay.

These clays cover practically the whole of the 400 acres of land owned by this company and are of extent sufficient to supply several such factories for a long term of years.

MANUFACTURING PLANT.

The equipment of this plant consists of two 125 horse-power boilers, equipped with all modern appliances; two 100 horse-power engines, complete system of fire protection, consisting of heavy pumps which derive their water supply from an artificial lake of two or three acres in extent and of a depth varying from three to fifteen feet; about 1,000 feet of 3-inch and 5-inch water line and 400 feet of 2½-inch high pressure hose.

Two 9-foot dry pans, one hammer pulverizer for crushing clay, two 4-mould dry presses, one large size auger brick machine, with automatic cutting devices and steam power re-press; one large size hollow ware auger machine for the manufacture of tile, pipe, hollow blocks and all other hollow plastic ware, a 13-track waste heat, fire-dryer with one 24-foot steel force fan and one 10-foot steel exhaust each directly driven by their own individual engine. One hundred fifty steel deck dryer cars.

KILN EQUIPMENT.

The kiln equipment consists of 6 round down-draft kilns, with perforated floors of improved type, which have a capacity of about 90,000 brick each.

Two permanent up-draft kilns of 200,000 capacity each, and one small experiment kiln.

PRODUCTS.

The product consists of high grade fire brick, stiff mud face brick varying in shade from white to dark chocolate, both mottled and plain.

Common building brick and drain tile. Vitrified sewer pipe will soon be added. The shipping of raw and milled fire clay is a prominent branch of this industry, this product reaching out for several hundred miles.

The force at present employed consists of about 40 men, which will be largely increased in the near future. The average wage paid is about \$1.65 per day.

WRIGHT AND WEBSTER COUNTIES.

Lead and zinc ores are produced in small quantity in Wright and Webster counties, there being one producing mine in each of the counties named. In Wright county 51 tons of lead ore was produced during the year 1904; while in Webster only 32 tons of lead ore were mined.

No very extensive efforts have been made to demonstrate the extent of lead and zinc occurrence in these counties, although surface indications are not wanting to suggest the presence of valuable ore deposits in several places within their boundary lines. Geological conditions also place them in close relation to ore producing counties of the Ozark uplift, but their future mining history must remain unwritten until capital and enterprise shall have lifted the veil of uncertainty which yet conceals the mining destinies of the counties.

IRON ORE.

The largest iron ore producers of the Eastern District are Crawford, Howell and St. Francois. These have all had special descriptive notice *in this report*. Besides these the following group of counties produce *iron ore in smaller and varying quantity*: They are given in the order *of their production*, the larger producer of the group being given first: *Butler, Phelps, Ripley, Carter, Iron, Gasconade and Osage*. The value

of the product in this group range from a small amount to \$7,735, and the total value of the iron ore from the list of minor producing counties for the year 1904 was \$13,654.

In some of these counties listed among the smaller producers of iron ore are deposits which are eminently worthy of more attention than they have yet had, and as the iron production in the State has been stimulated by market conditions, it is evident that development work and increased output will be a marked feature of the State's iron mining industry.

In connection with these, we must mention Oregon county, which has some deposits of iron ore, but no production of the ore was reported last year. However, there were reported from the county a production of 30 tons of silicate in the year 1904.

The total value of iron ore produced in 1904 amounted to \$194,525.

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Prices received for		Receipts from sale of		Total value of lead and zinc ores.....
Lead ore, per ton....	Dry-bone, per ton...	Zinc ores.....	Lead ores.....	
\$48 00.....			\$307,061	\$307,061
44 00.....			51,524	51,524
44 00.....			27,928	27,928
43 60.....			559,551	559,551
48 90.....			988,889	988,889
42 16.....			400,181	400,181
45 23.....			1,059,158	1,059,158
45 00.....			698,002	698,002
\$45 19.....			\$4,088,094	\$4,088,094
				\$33,412
				14,994
				\$4,086,500
\$42 00.....			\$74,592	\$74,592
50 00.....			250,750	250,750
48 00.....			115,504	115,504
\$48 16.....			\$440,846	\$440,846
				\$5,056
				25,882
				89,708
				\$560,902

POSTOFFICE DIRECTORY OF LEAD AND ZINC OPERATORS
—EASTERN DISTRICT.

COLE COUNTY.

Company.	Operator.	Postoffice.
Elston Mining Company.....	Elston.....
Jefferson Development Company.....	Centretown.....
Eastern Star Lead and Zinc Co....	Centretown.....
Urban, Wm.....	California.....
Independence Mining Company..	Henley.....

CRAWFORD COUNTY.

Cherry Valley Mine.....	.....	Sligo.....
Copper Mountain Mining Co.....	Sullivan.....

FRANKLIN COUNTY.

Belew Mining Company.....	East St. Louis, Ill...
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JEFFERSON COUNTY.

Valle Mining Company.....	Valle Mines.....
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MADISON COUNTY.

Mine La Motte Lead & Zinc Co....	Mine La Motte.....
North American Lead Company...	Fredericktown.....
Madison Lead & Land Company...	.....	Fredericktown.....
Mine La Motte Developement Co.	.....	Mine La Motte.....

MONITEAU COUNTY.

Monarch Mining Company.....	.....	High Point.....
Gundling Mining Company.....	.....	Out of business.....

MORGAN COUNTY.

Versailles Fire Brick & Olay Manufacturing Company.....	.....	Versailles.....
Mad Springs Mining Company...	.....	Versailles.....

ST. FRANCOIS COUNTY.

Louis Smelting & Refining Co.....	.....	St. Louis.....
Joseph Lead Company.....	.....	Bonne Terre.....
Central Lead Company.....	.....	Flat River.....
Large Consolidated Lead Co.....	.....	St. Louis.....
Central Lead Company.....	.....	St. Louis.....
Madison Lead Company.....	.....	Esther.....
Lead Company.....	Commercial Lead Company.....	Esther.....
		Doe Run.....

WASHINGTON COUNTY.

Company.	Operator.	Postoffice.
American Lead & Baryta Co.....	.....	St. Louis.....
Rennecke, Louis.....	.....	Irondale.....
.. ..	G. M. London.....	Flat River.....
.. ..	W. S. Townsend.....	Potosi.....
.. ..	W. H. Miller, Jr.....	St. Louis.....
.. ..	H. S. Whitener.....	Flat River.....
Washington Land & Mining Co....	.....	St. Louis.....
White Glen Mining Company.....	.....	St. Louis.....
Renault Lead Company.....	.....	St. Louis.....
Pittsburg-Potosi Lead Company.....	.....	Potosi.....
Abbeyville Mining Company.....	.....	St. Louis.....
Banta, C. N.....	.....	Baryman.....
Long & White.....	.....	Potosi.....
Higgenbotham & Sons.....	.....	Fertile.....
Southeast Mo. Baryta Co.....	.....	Blackwell.....

The following Sections in the Mining Laws have been amended and repealed since the printing of the Revised Statutes of 1899:

Sections 8791-8793-8794-8811-8817-8818, while Sections 8826 and 8827, embracing the shot-firing law, were repealed in 1901 and again in 1903. This law, as it now stands, was approved March 10, 1903.

LAWS OF THE STATE OF MISSOURI

RELATING TO

Mines, Mining and Mine Inspection.

CHAPTER 133.

ARTICLE I—Mines and mining.

II—Safety and inspection of mines.

ARTICLE I.

MINES AND MINING.

SECTION

- 8766. Rights of miners and owners of mining lands—condition of permits.
- 8767. Forfeiture.
- 8768. Tender of payment.
- 8769. Notice to owner or lessee.
- 8770. Sale of ore.
- 8771. Injunction or restraining orders—notice of application to dissolve.
- 8772. Affidavit of course of drift and order to be made.
- 8773. Order to be read.
- 8774. Refusal to obey order a misdemeanor.
- 8775. Owner or lessee shall drain mine, etc.
- 8776. Scrapping for ore prohibited, etc.—penalty.
- 8777. Indemnity bond required to mine in certain cities, etc.—violation a misdemeanor—penalty.
- 8778. Notice of intention to mine, publication required.
- 8779. Petition to circuit court—court to fix and approve bond.
- 8780. Testimony on application—bond, etc.—time granted.

SECTION

- 8781. Bond required.
- 8782. Written permission of property owner—violation, misdemeanor—penalty, fines, etc.
- 8783. Costs attending notice.
- 8784. Diagram of mines, etc., to be filed in court.
- 8785. Application of article to mining companies.
- 8786. Screening coal before weighing prohibited.
- 8787. Weighman shall take an oath, etc.—penalty.
- 8788. Penalty for using false scales.
- 8789. Shall apply to loaders in certain mines.
- 8790. Inspector to test scales.
- 8791. Employes to be paid, when.
- 8792. Miners' and employes' lien.
- 8793. Miners not to work more than eight hours.
- 8794. Violation of preceding section—penalty.
- 8795. Miners to be brought to surface for meals.
- 8796. Violation of preceding section—penalty.

SEC. 8766. Rights of miners and owners of mineral lands
condition of permits.—When any person owning real estate in

state, or any person having a leasehold interest in such real estate for mining purposes by lease from the owner thereof, duly acknowledged and recorded in the county wherein the land lies, shall permit any person or persons, other than their servants, agents or employes, to enter and dig or mine thereon for lead ore or other minerals, with the consent of such owner or owners or lessee, he or they shall keep a printed statement of the terms, conditions and requirements upon which such lands may be mined or prospected, and the time during which the right to mine or prospect thereunder shall continue, posted or hung up in a conspicuous place, in plain, legible characters, in the principal office or place of business of such person or company in the county in which said lands are situated or in a county contiguous thereto, and shall deliver to any person mining or prospecting, or about to mine or prospect on said lands, and requesting it, a printed copy of such statement; all persons digging or mining on said lands, after the posting up of such statement, shall be deemed to have agreed to accept the terms thereof, and shall, together with such owner or lessee, be bound thereby, and upon failure or refusal to comply with the terms, conditions and requirements of such statement, he or they shall forfeit all right thereunder, and the owner or lessee, as aforesaid, of such lands, may re-enter thereon and take possession of the same, nor shall the receipt of any ore or mineral by any such owner or lessee after such forfeiture has been incurred, be deemed or taken as a waiver of such forfeiture. (R. S. 1889, § 7034—a.)

SEC. 8767. **Forfeiture.**—Whenever any such owner or lessee of real estate shall permit any person or persons, other than their servants, agents or employes, to enter and dig for lead ore or other minerals on such real estate with his consent, but without such owner or lessee complying with the provisions of section 8766, and such person or persons having so entered upon said lands by the permission or consent of such owner or lessee as aforesaid, and having in good faith dug or opened any shaft, mine, quarry, prospect or deposit of mineral, or extended or opened from any shaft or mine any room, drift, entry or other excavation, he or they shall have the exclusive right as against such owner or lessee giving such permission or consent, and against any person claiming by, through or under such owner or lessee, to continue to work, mine and dig such

Mo. 23; 135 Mo. 101; 130 Mo. 1; 74 Mo. 173; 75 A. 524; 55 A. 662; Citations. 125 Mo. 370; 104 Mo. 282; 97 Mo. 325; 93 Mo. 107; 56 Mo. 68; 54 Mo. 426; 29 Mo. 141; 75 A. 611 (see 130 Mo. 1); 1 A. 249; 53 A. 548; 21 A. 58; 17 A. 294.

shaft, mine, prospect or deposit of mineral so dug or opened by him or them as aforesaid, in said real estate, with a right of way over such land for the purpose of such mining, for the term of three years from the date of giving of such consent or permit: Provided, however, that if such person or persons, in each case so mining as aforesaid, shall fail or neglect to work or cause to be worked such shaft, mine, quarry, prospect or deposit of mineral for ten days, not including Sundays, in any one calendar month, after commencing said work, he or they shall forfeit all rights to work, mine or hold the same as against such owner or lessee, unless such failure or neglect was caused by unavoidable circumstances, or by the act of such owner or lessee or his agent, or unless such owner or lessee consent thereto: Provided, further, that such person or persons, so mining as aforesaid, shall pay to the owner or lessee of said lands giving such permit or consent the royalty for mining thereon, at least once every month, if demanded by such owner or lessee, by delivering the same to him at or near the mouth or opening of such mine, shaft or quarry, or at the nearest usual place of business of such owner or lessee, or at any other place that may be agreed upon by such miner and owner or lessee; which said royalty, unless otherwise agreed upon by them, shall be the same kind and proportionate amount as is paid by others mining the same kind of ore or mineral on said lands to such owner or lessee, or the value of such royalty in cash; and if there be no other person mining on said lands on terms prescribed by such owner or lessee, then he or they shall pay to such owner or lessee the same rate and kind of royalty on lead ore or minerals taken out by him or them as is paid by miners on lands nearest thereto belonging to other persons, or the value of such royalty in cash. Such owner or lessee of any real estate shall have a lien on all minerals taken or dug therefrom for the royalty due thereon until the same is paid; and if any such person or persons so mining shall refuse or fail to pay such royalty to such owner or lessee, or his agent, when demanded as aforesaid, he or they shall thereby forfeit the right to work such mine, shaft, quarry, prospect or deposit of mineral, and the said owner or lessee may thereupon enter and take possession of the same. (R. S. 1899, § 7035.)

SEC. 8768. Tender of payment.—Any such person or persons who, by the permission or consent of the owner or lessee of any real estate, and having the right to mine thereon, and having entered and dug or mined thereon any lead ore or other mineral, shall have the

right to the exclusive possession of such ore or mineral, except the royalty thereon, which shall be paid as hereinbefore provided, until he or they shall be paid or tendered by such owner or lessee of such real estate the then highest market price in cash paid by such owner or lessee for the same kind of ore or mineral dug or mined on said lands, and if no other such ores or minerals are at the time being dug or mined on said lands and sold to such owner or lessee, then the highest price paid for such ore or mineral dug on lands nearest thereto shall be paid or tendered by such owner or lessee in such case, and upon such payment or tender, the absolute right to the possession of such lead ore or other mineral so dug out and mined under the provisions of the next preceding section, and for which such payment or tender shall have been made, shall vest in such owner or lessee. (R. S. 1889, § 7036.)

SEC. 8769. Notice to owner or lessee.—If any person or persons having dug or mined lead ore or other mineral, and having the same in his or their possession, and having offered to deliver such mineral according to contract, or paid or tendered the royalty, if any, due thereon, or the value of such royalty in cash, to such owner or lessee of such real estate, or to his agent, shall serve or cause to be served a notice in writing upon such owner or lessee or his agent, by delivering to him a copy thereof, or by leaving a copy thereof at the usual place of abode of such owner, lessee or agent, with some member of the family over the age of fifteen years, stating in such notice the amount of lead ore or other mineral he or they have ready for delivery, and requiring such owner, lessee or agent to receive and pay for the same, the said owner or lessee shall, within five days after the service of such notice, receive and pay for such lead ore or other mineral which the said person or persons digging or mining the same may deliver to him, not exceeding the amount named in the notice; and in such case, if such owner or lessee fail or refuse within the time aforesaid to pay for such lead ore or mineral delivered or offered to be delivered to him as aforesaid at the said price, then in that event the said person or persons who dug and mined the same shall thereupon acquire an absolute title to such lead ore or mineral, and may thereupon dispose of the same to any person or in any manner he or they may choose. (R. S. 1889, § 7037.)

SEC. 8770. Title of ore.—All lead ore, or other mineral, dug or mined on the lands of any person in this state, shall be deemed to be the absolute property of the owner or lessee of said lands, except in cases it is modified, changed or transferred

by express contract, and any person who shall unlawfully sell or convert to his own use, or remove or dispose of, or in any manner make away with or conceal any such ore or mineral, so as to deprive the owner thereof of the same, shall be deemed guilty of grand or petit larceny, according to the value of such ore or mineral. (R. S. 1889, § 7038.)

SEC. 8771. Injunction or restraining orders—notice of application to dissolve.—No injunction or restraining order shall be granted by any court or by any judge thereof to enjoin or restrain the working of any mine or mines, or in any manner to interfere with the same, except upon notice first being given to the person working or operating said mine or mines, and sought to be enjoined or restrained, which notice shall be served by delivering to such person a copy thereof, or by leaving a copy thereof at his usual place of abode with a member of the family over the age of fifteen years, at least five days before the day set for the hearing of the application for the injunction; and the court or judge granting such injunction or restraining order shall have the power, upon good cause being shown, to dissolve, vacate or modify any such injunction or restraining order at any time after the same shall have been granted, whether in term time or vacation: Provided, that the party applying to such court or judge to dissolve, vacate or modify any such injunction or restraining order shall give due notice to the opposite party of such intended application. (R. S. 1889, § 7039.)

SEC. 8772. Affidavit of course of drift and order to be made.—When any owner, tenant or sub-tenant of a lot or lots or tract of land shall file with any justice of the peace within the county in which said lot or lots or tract of land may be situated his or her affidavit, or the affidavit of any other creditable person for them, stating that from knowledge, information or belief, the party or parties owning, controlling or working the adjoining lot or lots or tract of land, and upon which said party or parties are sinking shafts, mining, excavating and running drifts, and that said drifts in which parties are digging, mining and excavating mineral ore or veins of coal extend beyond the lines and boundaries of said lot or lots or tract of land, owned, controlled or worked by them, and have entered in and upon the premises of the party or parties making said affidavit, or for whom said affidavit is made, the justice of the peace, after first being tendered his lawful fees, shall issue his written order and deliver or cause the same to be delivered to the county surveyor or his deputy, commanding *him, after his reasonable fees have been tendered, to*

proceed without delay to survey said drift by entering any and all shafts upon said lot or lots or tract of land that he (the surveyor) may see fit, for the purpose of ascertaining the course and distance of said drift or drifts, and to locate the same upon the surface. (R. S. 1889, § 7040.)

SEC. 8773. Order to be read.—The surveyor shall, before entering upon said duty, read said order to the party or parties owning, controlling or working any shaft or shafts on said lot or lots or tract of land. (R. S. 1889, § 7041.)

SEC. 8774. Refusal to obey order a misdemeanor.—If said parties or parties owning, controlling or working said shaft or shafts on said lot or lots or tract of land shall refuse, hinder or prevent said county surveyor or his deputy and his assistant from entering said shaft or shafts or drifts, to make the survey so ordered by the justice of the peace, and every person so offending shall, on conviction, be adjudged guilty of a misdemeanor, and punished by imprisonment in the county jail for a term of not exceeding one year, or by fine not exceeding three hundred dollars, or by both said fine and imprisonment. (R. S. 1889, § 7042.)

SEC. 8775. Owner or lessee shall drain mine, etc.—When any person owning any real estate in this state, or any person or persons having a leasehold therein for the purpose of mining for lead or zinc ore thereon by lease from such owner, shall open such real estate for mining purposes, and shall permit any person or persons other than their agents, servants or employes to enter and dig or mine for lead or zinc ores thereon, and shall make any rule or contract whereby any pump-rent or royalty is reserved unto said landowner or lessee for the drainage of the land so mined, and shall fail or refuse to drain any such land or mining lot to the full depth to which the laborers are working or seeking to work, but prevented by water, then and in such event, such owner or lessee thereof shall not be entitled to collect or retain any pump-rent or royalty so reserved as aforesaid for any ores taken from said mine or lot, below the depth of water level in said mine or lot, so long as said owner or lessee shall fail or refuse to drain said mine, nor shall such land owner or lessee be entitled to forfeit any right to hold and mine said lot so long as work is prevented therein by reason of water accumulated therein, on account of any failure to drain said mine by such land owner or lessee, any rule, contract or agreement to the contrary notwithstanding. (R. S. 1889, § 7043.)

SEC. 8776. Scrapping for ore prohibited, etc.—penalty.—It shall be unlawful for any person to take or in any manner receive or ob

tain any lead or zinc ore by means of gleaning or culling, commonly called "scrapping," without first having obtained the written consent of the person having possession and control of the mine from which said ores are to be taken; and it shall be unlawful for any person or company of persons to purchase, or in any manner to receive any lead or zinc ore which may have been stolen or taken by means of culling or gleaning, commonly called "scrapping," without such written consent as aforesaid, knowing that said ores have been so stolen or taken without written consent as herein provided. Any person violating the provisions of this section, on conviction, shall be punished by fine of not more than one hundred dollars, or by imprisonment in the county jail not more than one year, or by both such fine and imprisonment, and the inadequacy of the price paid for such ore, the quantity purchased or received, and the fact that the person from whom such ores may have been purchased or received is not regularly engaged in running or operating mines for such ores, may be shown, and shall be received as prima facie evidence of guilty knowledge of the person so purchasing or receiving such ores: Provided, however, that nothing herein contained shall be so construed as to prevent any person from gleaning, culling or scrapping for ores about his own mine, nor to prevent any person from purchasing such ores when the same have been obtained in such manner by the owner or operator of any such mine. (R. S. 1889, § 7044.)

SEC. 8777. Indemnity bond required to mine in certain cities, &c.—violation a misdemeanor—penalty.—No person, company or corporation shall hereafter sink a shaft, mine, tunnel, excavate or drift for coal, or take out any coal of any kind within the corporate limits or designated boundaries of any city, town or village in this state containing one thousand inhabitants or more, without having first applied and filed, and have approved, an indemnity bond as hereinafter provided for; and any person or persons violating the provisions of this section, and any member or stockholder or officer of any company or corporation who shall violate the provisions of this section, shall be deemed guilty of a misdemeanor, and on conviction thereof, shall be punished by fine of not less than five hundred dollars, or imprisonment in the county jail for not less than six months, or by both such fine and imprisonment. (R. S. 1889, 7045.)

SEC. 8778. Notice of intention to mine—publication required.—Every person, company or corporation desiring to carry on any of the mining operations provided for in the preceding section shall

give at least thirty days' notice of such intention by notice printed and published in some newspaper printed in such town, city or village wherein such mining operations are proposed to be carried on, or if no newspaper be printed in such city, town or village, then in some newspaper printed in said county, or if no newspaper be printed in such county, then by written or printed hand-bills posted up in six public places in the city, town or village wherein such mining operations are proposed to be carried on. Such notice shall contain an accurate description of the locality where such mining operations are to be carried on, giving the number of lot and block, and shall also state the nature of such mining operations, and name some day of the term of the next circuit court in said county, thereafter to be holden, when such person, company or corporation will offer for filing and approval the indemnity bond hereinafter provided for. (R. S. 1889, § 7046.)

SEC. 8779. Petition to circuit court—court to fix and approve bond.—On the day mentioned in such notice, the persons, company or corporation proposing to carry on such mining operations shall present their petition to said circuit court, setting out the locality of the proposed mines and the nature and extent of the proposed mining operations, and shall also file with such petition the title papers of such person or company or corporation to the lands on which such mining operations are proposed to be carried on, showing either the fee simple title of such land in such company, or the right to mine beneath or in such land, and shall also contain the names of all persons to be offered as security upon the mining bond of such persons, company or corporation, and shall pray the court to fix and approve the mining bond of such persons or corporation. (R. S. 1889, § 7047.)

SEC. 8780. Testimony on application—bond, etc.—time granted. The court may, upon such application, hear testimony upon all the matter involved in such application, including testimony upon the solvency and responsibility of the securities offered, and may hear testimony from parties interested in the lots and lands in the neighborhood of such proposed mining operations, and if the court is satisfied that the proposers own the land or mining privileges under the land described in their petition, the court shall fix the amount of the bond to be given by such proposers, such bond to be in no case for less than one thousand dollars; and upon the giving and approval of such bond, so fixed by the court, the court shall enter *its order authorizing* the mining operations specified in said petition, *and upon the localities* ~~so~~ therein named, and not elsewhere, for the

space of two years, unless in the meanwhile revoked. (R. S. 1889, § 7048.)

SEC. 8781. Bond required.—Such bond shall be signed by the proposers, and by not less than two securities, to be approved by said court, residents of the county wherein such mining is to be carried on, and shall be made payable to the state of Missouri, and conditioned that the principal in said bond shall carry on the mining operations proposed in the petition in a careful manner, and the said parties shall not mine, dig, excavate nor take coal nor earth from or under any land or lots than that described in the said bond, and shall pay all damages that may be sustained by any and all persons by reason of the violation of any of the conditions of said bond, and any and all charges, fines and penalties that may be levied, assessed against or imposed upon the said proposers, their agents, servants, stockholders, officers or employes, by reason of any violation of the conditions of said bond or any of the provisions of this law. (R. S. 1889, § 7049.)

SEC. 8782. Written permission of property owner—violation, misdemeanor—penalty, fines, etc.—Any person or persons who shall in person, or by their servant, agent or employe, dig, excavate, mine, tunnel or drift upon or under the lands or lots of another, within the incorporate limits or designated boundaries of any city, town or village in this state, and every officer and stockholder that shall either authorize or permit its servants, agents or employes to dig, excavate, mine, tunnel or drift upon or under the lands or lots of another within such limits or boundaries of such city, town or village, without the written permission of the owner or owners of such land or lots, shall be deemed guilty of a misdemeanor, and shall be punished, on conviction, for every offense, by fine of not less than five hundred dollars, with costs, which fine and costs, if not paid within five days after conviction, may be sued for and recovered against the parties and sureties on the mining bond of such persons, company or corporation liable for such acts, in suit upon such bond, in the name of the state of Missouri, to the use of the county in which such offense is committed; such fine, when collected, shall be paid, one-half to the owner of the property injured by such offense and the other half into the school fund of such county; but no such conviction shall be a bar to the owner of such property prosecuting a suit on said bond to his own use for the damages sustained by any such offense. Every such conviction, whether *appealed from or not, shall work a forfeiture of the authority to mine granted such person, company or corporation liable, and they shall*

not proceed further with the operations, except by making application and giving a new bond as in the first instance. (R. S. 1889, § 7050.)

SEC. 8783. Cost attending notice.—The costs attending the giving notice, making application and receiving mining privileges shall all be paid by the person, company or corporation making the same, and no such privilege shall take effect until all such costs be paid. (R. S. 1889, § 7051.)

SEC. 8784. Diagram of mines, etc., to be filed in court.—At each term of the circuit court, during the continuance of any mining license, every person, company or corporation carrying on such mining operations shall, at their own expense, cause to be made by the county surveyor of the county where such mines are located, and filed with the court, under oath of such surveyor, a complete and true diagram of such mines, showing with reference to the boundaries of such mines, and the lots and lands of neighboring owners, the extent of such mines, their drifts, tunnels and excavations, giving the length and breadth of each drift, bank and tunnel, so as to fully inform the court and parties in interest of the extent and character of such mining operations. Such plats and diagrams shall remain on file with the clerk of such court, and shall not be removed by any one from the files of such court. Any failure to file the diagram and plat herein provided for, or to make such diagram show all the particulars herein provided for, shall work a forfeiture of the mining privileges of such person, company or corporation, which forfeiture the court shall, on the motion of any party in interest, declare on three days' notice to the party holding such license or privilege. (R. S. 1889, § 7052.)

SEC. 8785. Application of article to mining companies.—In no case shall the eight preceding sections of this article be so construed as to apply to persons, companies or corporations engaged in mining for lead, zinc or other ores of minerals, except coal. (R. S. 1889, § 7053.)

SEC. 8786. Screening coal before weighing, prohibited.—It shall be unlawful for any mine owner, lessee or operator of coal mines in this state, employing miners at bushel or ton rates, or other quantity, to pass the output of coal mined by said miners over any screen or any other device which shall take any part from the value thereof before the same shall have been weighed and duly credited *to the employe* sending the same to the surface, and accounted for at *the legal rate of weights* as fixed by the laws of Missouri; and no

employe within the meaning of this article shall be deemed to have waived any right accruing to him under this section by any contract he may make contrary to the provisions thereof. And any provision, contract or agreement between mine owners or operators thereof, and the miners employed therein, whereby the provisions of this article are waived, modified or annulled, shall be void and of no effect, and the coal sent to the surface shall be accepted or rejected; and if accepted, shall be weighed in accordance with the provisions of this article, and right of action shall not be invalidated by reason of any contract or agreement; and any owner, agent or operator of any coal mine in this state who shall knowingly violate any of the provisions of this section shall be deemed guilty of a misdemeanor, and, upon conviction, shall be punished by a fine of not less than two hundred dollars nor more than five hundred dollars for each offense, or by imprisonment in the county jail for a period of not less than sixty days nor more than six months, or by both such fine and imprisonment; proceedings to be instituted in any court having competent jurisdiction. (R. S. 1889, § 7054, amended.)

SEC. 8787. **Weighman shall take oath, etc., penalty.**—The weighman employed at any mine shall subscribe an oath or affirmation before a justice of the peace, or other officer authorized to administer oaths, to do justice between employer and employe, and to truly and correctly weigh the output of coal from the mines as herein provided. The miners employed by or engaged in working for any mine-owner, operator or lessee of any mine in this state shall have the privilege, if they desire, of employing at their own expense a check weighman, who shall have like equal rights, powers and privileges in the weighing of coal as the regular weighman, and be subject to the same oath and penalties as the regular weighman. Said oath or affirmation shall be kept conspicuously posted in the weigh-office, and any weigher of coal or person so employed, who shall knowingly violate any of the provisions of this article, or any owner, operator or agent of any coal mine in this state who shall forbid or hinder miners employing or using a check-weighman as herein provided, or who shall prevent or wilfully obstruct any such check-weighman in the discharge of his duty, shall be deemed guilty of a misdemeanor, and upon conviction, shall be punished by a fine of not less than one hundred dollars nor more than five hundred dollars for each offense, or by imprisonment in the county jail for a period not less than thirty days nor more than ninety days, or by both such fine and imprisonment, proceedings to be instituted in

any court having competent jurisdiction. Whenever the commissioner of labor shall be satisfied that the provisions of this section have been wilfully violated, it shall be his duty to forthwith inform the prosecuting attorney of any such violation, together with all the facts in his knowledge, and the prosecuting attorney shall thereupon investigate the charge so preferred, and if he be satisfied that the provisions of this section have been so violated, it shall be his duty to prosecute the person or persons guilty thereof. (R. S. 1889, § 7055, amended, Laws 1895, p. 229.)

SEC. 8788. Penalty for using false scales.—That every owner, agent or operator of any coal mine in the state employing miners at bushel or ton rates, shall provide at such mine or mines accurate and suitable scales of standard manufacture upon which shall be weighed all coal coming out of such mine or mines; said scale or scales to be located at a reasonable distance from the point where the coal is delivered to the surface opening of the mine or mines, and in no case shall said scale or scales be located at a greater distance from surface opening of the mine or mines than one hundred feet. Any owner, agent, operator, person, or persons having or using any scale or scales for the purpose of weighing the product of the miners' labor, and so arranges or constructs said scale or scales, or by any contrivance therewith connected causes the fraudulent weighing of such coal or said product, or who shall knowingly resort to, permit or employ any person or means whatsoever, by reason of which said product of the mine is not correctly weighed and reported in accordance with the true weight and the provisions of this article, shall be deemed guilty of a misdemeanor, and shall, upon conviction for each and every offense, be punished by a fine of not less than two hundred dollars, nor more than five hundred dollars, or by imprisonment in the county jail for a period not to exceed ninety days, or by both such fine and imprisonment; proceedings to be instituted in any court of competent jurisdiction. (R. S. 389, § 7056, amended.)

SEC. 8789. Shall apply to loaders in certain mines.—The manner of weighing, as hereinbefore provided for, shall apply to the class of workers in mines known as loaders, engaged in mines wherein the mining is done by machinery, whenever the workmen are under contract to load coal by the bushel, ton, or any quantity the settlement is had by weight. (R. S. 1899, § 7057.)

SEC. 8790. Inspector of weights and measures and coal mines.—That the coal mine inspector shall be *ex officio* inspector of weights, measures and coal mines, and he is hereby empowered

and it shall be his duty to test the scales used to weigh coal mined in the mines of this state at least every six months, to ascertain whether or not such scales correctly measure the weight of such coal, and if defects or irregularities are found, such scales which prevent correct weight and measurements the inspector shall call the attention of the mine owner, agent or operator to said defects and direct that the same be at once properly adjusted and corrected. If the owner, agent or operator of any coal mine in this state shall refuse to allow such inspector to properly test the scales at such mine or mines, or shall fail or refuse to put scales in proper adjustment and condition, so that the same shall correctly weigh the coal mined after being notified by said inspector so to do, such owner, agent or operator shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be fined not exceeding five hundred dollars, or be confined in the county jail not exceeding six months, or both, in the discretion of the court, and it shall be the duty of the prosecuting attorneys in the respective counties to prosecute any person, firm or corporation violating the provisions of this section the same as in other misdemeanor cases. (New section.)

SEC. 8791. **Employees to be paid, when.**—The employees of the operators of all mines operated within this State for the productions of any kind of mineral shall be regularly paid in full of all wages due them at least once in every fifteen days, except that the operators of coal mines shall pay their employees once every fifteen days, on demand of any such employe, and at no pay day shall there be withheld any of the earnings due any employe. Any such operator who fails or refuses to pay his employees, their agents, assigns or any one duly authorized to collect such wages, or any one interested in the payment due such employes, as in this section provided, shall become immediately liable to any such employe, his agent or assigns, or any one interested for an amount double the sum due such employe at the time of such failure or refusal to pay the wages due, to be recovered by civil action in any court of competent jurisdiction within this state. And no employe, within the meaning of this article, shall be deemed to have waived any right accruing to him under this section by any contract he may make contrary to the provisions hereof: *Provided*, coal mining companies may contract with their employees to pay once a month; and *provided further*, that at no pay day of any coal mining company shall there be withheld of the earnings of any coal mine employe any sum to exceed the amount due him for his labor for ten days next preceding any such pay day. (R. S. 1880. § 7059, amended, Laws 1891, p. 183, amended—b.)

SEC. 8792. Miners' and employes' lien.—That all miners and other employes engaged in the work of developing and opening up coal mines, the sinking of shafts, the construction of slopes or drifts, the driving of entries, mining coal, and for all other labor performed in and about coal mines, shall have, as security for work performed a lien upon all the property of the person, owner, agent, firm, or corporation owning, constructing or operating such mine or mines, used in construction or operation thereof, including real estate, building, machinery, pit cars, tracks, mules, scales, and all other personal property, to satisfy in full amount due for such labor performed; the same to be enforced and secured upon the same general terms and after the manner of procedure in granting mechanics' liens. (New section.)

SEC. 8793. Miners not to work more than eight hours.—It shall be unlawful for any person or persons, or corporation engaged in mining for minerals, stone or any valuable substance, or in making excavations at a greater depth than two hundred feet where lead or zinc ore is mined beneath the surface of the earth while searching for minerals, stone, or any valuable substance, to work their hands or employes, at such labor or industry, continuously longer than eight hours in a day of twenty-four hours, and it is hereby declared that eight hours shall constitute a day for all labors or employes engaged in the kind of labor or industry aforesaid: *Provided*, that nothing in this section shall be so construed as to apply to any person or persons or corporations engaged in coal mining. (New Section.)

SEC. 8794. Violation of preceding section—penalty.—Any person or persons, or corporation who shall violate any of the provisions of the preceding section shall, on conviction, be fined in a sum not less than twenty-five nor more than five hundred dollars, or by imprisonment in the county jail not exceeding three months, or by both such fine and imprisonment. (New section.)

SEC. 8795. Miners to be brought to surface for meals.—On and after the passage and taking effect of this section, all owners, lessees and operators of any mine in this state, the work of which is located below the surface of the ground, entrance to which is had by any shaft, cut or tunnel, shall allow the laborers and miners in their several mines to come to the surface of the ground for the purpose of eating their noon-day meal or any other meal for which, under the rules of any mine a time is set apart; and that at least one hour shall be allowed any miner or laborer for that purpose, and for rest after he reaches the surface of the ground before re-entering into any mine where he or she may be employed as a laborer or miner. Also, that the owner, lessee or operator of any mine in this state is hereby required to run his cage or hoisting ap-

paratus to the surface of the ground for the purpose of carrying any such miner or laborer, who may be going to or returning from any such aforementioned meal and rest, free of cost to any such miner or laborer. (New section.)

SEC. 8796. Violation of preceding section—penalty.—Any owner, lessee or operator of any mine in this state who shall fail or refuse to carry out any of the provisions of section 8795 of this article shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be fined in a sum of not less than one dollar nor more than twenty-five dollars; and each failure or refusal shall constitute a separate offense. (New section.)

ARTICLE II.

SAFETY AND INSPECTION OF MINES.

SECTION

- 8797. Maps of mines to be prepared, etc.
- 8798. Inspector to make maps if owner fails, etc.
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SECTION

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SEC. 8797. Maps of mines to be prepared, etc.—The owner, agent or operator of each and every mine in this state, employing ten or more men, shall make or cause to be made, at the discretion of the inspector or other person acting in that capacity, an accurate map or plan of the workings of such mine and each and every vein thereof, showing the general inclination of the strata, together with any material deflections in the said workings and the boundary lines of said mine, and deposit a true copy of said map or plan with the clerk of the county court of each county wherein may be located the said mine; which said map or plan shall be so filed or deposited within three months after the time when this article shall take effect, and a copy of such map or plan shall also be kept for inspection at the office of the said mine; and during the month of *January of each and every year* after this article shall have taken effect

the said owner, agent or operator shall furnish the inspector and the clerk of the county court as aforesaid with a statement, and a further map or plan of the progress of the workings of such mine, continued from the last report to the end of the month of December next preceding, and the inspector shall correct his map or plan of said workings in accordance with the statement and map or plan thus furnished; and when any mine is worked out or abandoned, that fact shall be reported to the inspector, and the map or plan of such mine in the office of the clerk of the county court shall be carefully corrected and verified. (R. S. 1889, § 7061.)

SEC. 8798. Inspector to make map if owner fails—cost.—Whenever the owner, agent or operator of any mine shall neglect, fail or refuse to furnish the said inspector and clerk as aforesaid with a statement, the map or plan or addition thereto, as provided in the first section of this article, at the times and in the manner therein provided the said inspector is hereby authorized to cause an accurate map or plan of the workings of such mine to be made at the expense of the said owner, agent or operator, and the cost thereof may be recovered by law from said owner, agent or operator, in the same manner as other debts, by suit in the name of the inspector and for his use. (R. S. 1889, § 7062.)

SEC. 8799. Escapement shafts, how constructed, etc.—It is unlawful for any owner, agent or operator of any coal mine worked by shaft to employ or permit any person to work therein unless there are to every seam of coal worked in each mine at least two separate outlets, separated by natural strata of not less than three hundred feet in breadth, by which shafts or outlets distinct means of ingress and egress are always available to the persons employed in the mine; but it is not necessary for the two outlets to belong to the same mine if the persons employed therein have safe, ready and available means of ingress and egress by not less than two openings; the communication or roadway between the two openings, or the two openings furnished by a connection between two distinct mines, shall at all times be kept clean and of such width and height as to make the same safe and available for a speedy exit in case of accident. The escapement shaft shall be fitted with safe and available appliances by which the persons employed in the mine may readily escape in case an accident occurs deranging the hoisting machinery at the main outlets, and such means or appliances for escape shall always be kept in a safe condition, and in no case shall an air shaft with a ventilating furnace at the bottom be construed to be an escapement shaft within the meaning of this section. The cage or cages and other *means of egress* shall at all times be available for the persons employed when there is no second outlet. To all other coal mines, *whether slopes or drifts*, two such openings or outlets must be pro-

vided within twelve months after shipments of coal have commenced from such mine, and in case such outlets are not provided as herein stipulated, it shall not be lawful for the owner, agent or operator of such slope or drift to permit more than five persons to work therein at any one time. All mines operated prior to the passage of this new section, having furnaces located in the bottom of the air shaft, shall have one year's time from the passage of this section in which to comply with the requirements therein. (R. S. 1889, § 7063, amended, Laws 1897, p. 199.)

SEC. 8800. Violation of preceding section—penalty.—Any owner, agent or operator of a coal mine in this state violating the provisions of the preceding section shall be deemed guilty of a misdemeanor, and for each offense, on conviction, shall be fined not less than fifty or more than two hundred dollars, or by imprisonment in the county jail not less than three or more than twelve months, or by both such fine and imprisonment. (Laws 1897, p. 199—c.)

SEC. 8801. Ventilation—fire-damp, etc.—The owner, agent or operator of every coal mine, whether operated by shaft, slope or drift, shall provide and maintain for every such mine a good and sufficient amount of ventilation for such men and animals as may be employed therein, the amount of air in circulation to be in no case less than one hundred cubic feet for each man, and six hundred cubic feet for each animal, per minute, measured at the foot of the downcast, and the same to be increased at the discretion of the inspector according to the character and extent of the workings, or to the amount of powder used in blasting; and said volume of air shall be forced and circulated to the face of every working place throughout the mine, so that such mine shall be free from standing powder-smoke and gases of every kind. All doors set on main entries for the purpose of conducting the ventilation shall be so constructed and hung as to close of themselves when opened, and shall be made sufficiently tight to effectually obstruct the air-currents. In all mines employing fifty or more men, a boy or trapper shall be kept in attendance upon such doors, to see that they are kept securely closed, and the air-currents properly controlled. Whenever the inspector shall find men working without sufficient air, or under any unsafe conditions, he shall first give the operator a reasonable notice to rectify the same, and upon his refusal to do so, may himself order them out until said portions of said mine shall be put in proper condition. The ventilation required by this section may be produced *by any suitable appliance*, but in case a furnace shall be used for

ventilating purposes, it shall be built in such a manner as to prevent the communication of fire to any part of the works, by lining the upcast with incombustible material for a sufficient distance up from said furnace. (R. S. 1889, § 7064, amended, Laws 1895, p. 228.)

SEC. 8802. Certain mines to be examined daily.—All mines generating gas in which men are employed shall be examined every morning by a practical and duly authorized agent of the proprietor, to determine whether there are any dangerous accumulations of gas, or lack of proper ventilation, or obstructions to roadways, or any other dangerous conditions; and no person shall be allowed to enter the mine until the examiner shall have reported all of the conditions safe for beginning work. Such examiner shall make a daily record of the condition of the mine, in a book kept for that purpose, which shall be open at all times to the examination of the inspector. The currents of air in mines shall be so split as to give a separate current to at least every fifty men at work, and the mine inspector shall have discretion to order a separate current for a smaller number of men, if special conditions render it necessary. (Laws 1895, p. 228.)

SEC. 8803. Experienced persons to handle explosives, etc.—It shall be unlawful for any operator or agent of coal mine to employ persons underground whose duties may involve contact with inflammable gases, or the handling of explosives, who have not had experience in such duties, unless all such employes are placed under the immediate charge and control of some competent and experienced miner, so as to secure the safety of other persons employed in the same mine. (Laws 1895, p. 228.)

SEC. 8804. Blasting holes to be charged, how.—It shall be unlawful for coal miners in any mine to charge a blasting hole with loose powder, or otherwise than with a properly constructed cartridge; and in dry and dusty mines, it shall be unlawful to load cartridges in the mines except with a powder-can constructed for the purpose. (Laws 1895, p. 228.)

SEC. 8805. Traveling ways through shafts, etc.—The bottom of every shaft shall be supplied with a traveling way, to enable men to pass from one side of the shaft to the other, and without passing under or over the cages. All sumps shall be securely planked over so as to prevent accidents to men. (Laws 1895, p. 228.)

SEC. 8806. Penalty for offenses.—Every owner, agent or operator of any coal mine in this state, employing five or more persons, *violating any of the provisions of sections 8801 to 8805, inclusive, shall be deemed guilty of a misdemeanor, and on conviction shall be fined for each offense not less than fifty nor more than two hun-*

red dollars, or by imprisonment in the county jail not less than three nor more than twelve months, or by both such fine and imprisonment. (Laws 1895, p. 228.)

SEC. 8807. Oils for illuminating purposes.—Only a pure animal or vegetable oil, or other oil as free from smoke as pure animal or vegetable oil, and not the product or by-product of rosin, and which shall, on inspection, comply with the following test, shall be used for illuminating purposes in the mines of this state. All such oil must be tested at 60 degrees Fahrenheit. The specific gravity of the oil must not exceed 24 degrees Tagliabue. The test of the oil must be made in a glass jar one and five-tenths inches in diameter by seven inches in depth. If the oil to be tested is below 45 degrees Fahrenheit, in temperature, it must be heated until it reaches about 80 degrees Fahrenheit; and should the oil be above 45 degrees and below 60 degrees Fahrenheit, it must be raised to a temperature of about 70 degrees Fahrenheit, when, after being well shaken, it should be allowed to cool gradually to a temperature of 60 degrees Fahrenheit before finally being tested. In testing the gravity of the oil, the Tagliabue hydrometer must be, when possible, read from below, and the last line which appears under the surface of the oil shall be regarded as the true reading. In case the oil under test should be opaque or turbid, one-half of the capillary attraction shall be deemed and taken to be the true reading. Where the oil is tested under difficult circumstances, an allowance of one-half degree may be made for possible error in parallax, before condemning the oil for use in the mine. All oil sold to be used for illuminating purposes in the coal mines of this state shall be contained in barrels or packages, branded conspicuously with the names of the dealer, the specific gravity of the oil, and the date of shipment. (Laws 1895, p. 225.)

SEC. 8808. Penalty.—Any person or persons, firm or corporation which ships any oil contained in any barrel or barrels, package or packages, which are not branded as prescribed in section 8807, said oil to be used for illuminating purposes in coal or other mines, and any person or persons, firm or corporation which sells any oil other than that prescribed in section 8807, to be used for illuminating purposes in coal mines, and any person or persons, firm or corporation having in charge the operation or running of any coal mine, which, in a mine under his or its charge, uses or permits the use of any oil other than that prescribed in section 8807, and any miner or mine employe who uses, with a knowledge of its character, in any coal mine in this state, and other oil than that prescribed in section 8807,

shall be deemed guilty of a misdemeanor, and on conviction shall be fined for each offense not less than fifty nor more than two hundred dollars, or by imprisonment in the county jail not less than three nor more than twelve months, or by both such fine and imprisonment. (Laws 1895, p. 225.)

SEC. 8809. Inspector to inspect oils.—It shall be the duty of the state coal mine inspector, in person or by some person designated by him, to inspect oils being used by miners to determine if the grade is of the standard described in section 8807 of this article—said inspection to be made at the pleasure of coal mine inspector, or a person designated by him. Should he find the grade of oil used below the grade fixed in section 8807, he shall notify the owner, agent or operator of the mine, and also notify the miners using the oil, that the quality is inferior, and if change is not made as soon as practical, he shall notify the prosecuting attorney of the county in which the mine is located, giving him all the facts, and the prosecuting attorney shall forthwith proceed to enforce the provisions of the two preceding sections. (Laws 1895, p. 225.)

SEC. 8810. Bore-holes.—The owner, agent or operator shall provide that bore-holes shall be kept twenty feet in advance of the face of each and every working place, and, if necessary, on both sides, when driving toward an abandoned mine and part of a mine suspected to contain inflammable gases or to be inundated with water. (R. S. 1889, § 7065.)

SEC 8811. Signaling—hoisting—certain miners not to work, etc. The owner, agent or operator of every mine operated by shaft shall provide suitable means of signaling between the bottom and the top thereof, and shall also provide safe means of hoisting and lowering persons in a cage covered with boiler iron, so as to keep safe, as far as possible, persons descending into and ascending out of said shaft; and such cage shall be furnished with guides to conduct it on slides through such shaft, with a sufficient break on every drum to prevent accident in case of the giving out or breaking of machinery; and such cage shall be furnished with spring catches, intended and provided, as far as possible, to prevent the consequences of cable breaking or the loosening or disconnecting of machinery; and no props or rails shall be lowered in a cage while men are descending into or ascending out of said mine: *Provided*, that the provisions of this section relating to covering cages with boiler iron shall not *apply to coal mines less than one hundred feet in depth, where the coal is raised by horse-power.* No male person under the age of *twelve years, or female of any age,* shall be permitted to enter any

mine to work therein; nor shall any boy under the age of fourteen years, unless he can read or write, be allowed to work in any mine. Any party or person neglecting or refusing to perform the duties required to be performed by the provisions of this article shall be deemed guilty of a misdemeanor, and punished by a fine in the discretion of the court trying the same, subject, however, to the limitations as provided by section 8815 of this article. (R. S. 1889, § 7066—d.)

SEC. 8812. Person in control of hoisting machinery, etc.—No owner, agent or operator of any mine operated by shaft or slope shall place in charge of any engine whereby men are lowered into or hoisted out of the mines any but an experienced, competent and sober person not under eighteen years of age; nor shall such engineer be permitted to operate the hoisting machinery unless he be located in such close proximity to the engine and drum as will enable him to continuously have supervision and control of both engine and drum; and no person shall be permitted to ride upon a loaded cage or wagon used for hoisting purposes in any shaft or slope, and in no case shall more than twelve persons ride on any cage or car at any one time; nor shall any coal be hoisted out of any mine while persons are descending into such mine, and the number of persons to ascend out of or descend into any mine on one cage shall be determined by the inspector; the maximum number so fixed shall not be less than four nor more than twelve, nor shall be lowered or hoisted more rapidly than five hundred feet to the minute. (R. S. § 7067, amended, Laws 1897, p. 199.)

SEC. 8813. Lowering and hoisting miners.—That the owner, agent or operator of all coal mines employing twenty-five or more men, where steam is used in lowering or hoisting men in shaft, shall cause a competent person to be stationed at the top of the shaft, and a competent person to be stationed at the bottom of the shaft, whose duties shall be to answer all signals for the lowering or hoisting of men in the shaft, and to keep watch over, and control of, such signals while men are being lowered or hoisted in the shaft. The persons so appointed to look after said signals shall be at their posts of duty at least thirty minutes before the hoisting of coal has commenced in the morning, and shall remain after the hoisting of coal has ceased in the evening, at least thirty minutes. Whenever six persons shall present themselves at the bottom of the shaft, and after having finished their day's work, or otherwise having been prevented

(d) 97 Mo. 62; 88 Mo. 68; 69 A. 601; 23 A. 216.

from working, an empty cage shall be furnished the same on which to ascend. And any owner, agent or operator of coal mines in this state, who shall knowingly violate any provisions of this section, shall be deemed guilty of a misdemeanor, and upon conviction, shall be punished by a fine of not less than one hundred dollars, nor more than three hundred dollars for each offense, or by imprisonment in the county jail for not less than thirty days nor more than ninety days, or by both such fine and imprisonment. (New section.)

SEC. 8814. Boilers—fencing entrances—signals, etc.—All boilers used in generating steam in and about coal mines shall be kept in good order, and the owner, agent or operator, as aforesaid, shall have the said boiler examined and inspected by hydrostatic pressure and warm water, by a competent boiler-maker or other qualified person, as often as once every six months, and the result of every such examination shall be certified in writing to the mine inspector; and the top of each and every shaft, and the entrance of each and every immediate working vein, shall be securely fenced by gates properly covering and protecting such shaft and entrance thereto; and the entrance to every abandoned slope, air or other shaft, shall be securely fenced off; and every steam boiler shall be provided with a proper steam gauge, water gauge and safety valve, and all underground self-acting or engine planes or gangways on which coal cars are drawn and persons travel, shall be provided with some proper means of signaling between the stepping places and the end of said planes or gangways, and sufficient places of refuge at the sides of such planes or gangways shall be provided at intervals of not more than twenty feet apart. (R. S. 1889, § 7068.)

SEC. 8815. Accidents—duty and power of inspector, etc.—Whenever loss of life or serious personal injury shall occur by reason of any explosion or of any accident whatsoever, in or about any mine, it shall be the duty of the person having charge of such mine to report the facts thereof without delay to the state mine inspector, and if any person is killed thereby, to notify the coroner of the county also, or in his absence or inability to act, any justice of the peace of said county; and the said inspector shall, if he deem it necessary from the facts reported, immediately go to the scene of said accident and make suggestions and render such assistance as he may deem necessary for the safety of the men; and the inspector shall investigate and ascertain the cause of such explosion or accident *and make a report thereof*, which he shall preserve with the other *records of his office*; and to enable him to make such investigation *he shall have the power to take depositions, compel the attendance*

of witnesses and administer oaths or affirmations to them; and the cost of such investigation shall be paid by the county court of the county in which such accident shall have occurred, in the same manner as costs of coroners' inquests are now paid. And a failure on the part of the person having charge of any mine in which any such accident may have occurred to give notice to the inspector or coroner, as provided for in this section, shall subject such person to a fine of not less than one hundred nor more than three hundred dollars, to be recovered of him in the name of the state of Missouri, before any justice of the peace of such county wherein the mine is situated and the accident occurred; and such fine, when collected, shall be paid into the county treasury for the use and benefit of said county. (R. S. 1889, § 7069.)

SEC. 8816. **Fines, how recovered.**—In all cases in which punishment is not provided for by fine under this article, for a breach of any of its provisions, the fine for the first offense shall not be less than fifty nor more than two hundred dollars, and for the second offense not less than two hundred nor more than five hundred dollars, to be recovered in any court of the state having competent jurisdiction. (R. S. 1889, § 7070.)

SEC. 8817. **The bureau of mines established, etc.**—There is hereby created a department to be known as the bureau of mines, mining and mine inspection, with its office located at the state capitol. The governor shall appoint two mine inspectors, one for coal mines, who shall have had practical experience in coal mines; and one for lead, zinc, iron and other mines, who shall have had practical experience in lead and zinc mines and mines other than coal mines; neither of whom shall be interested in any mine, and each to receive a salary of \$1,500.00 per annum. The inspectors shall have authority to appoint a secretary who, in addition to his other qualifications, shall be a draughtsman and competent to thoroughly understand and prepare mine maps, and who shall act as assistant in the field to either of the inspectors when required, and shall receive a salary of \$1,500 per annum. There shall also be allowed and paid out of the general revenue fund the actual traveling expenses of the inspectors, but not of the assistant, and the cost of postage, express charges and telegraphic messages. (R. S. 1889, § 7071, amended, Laws 1893, p. 209, amended.)

SEC. 8818. **Health of miners—report to governor.**—The inspectors provided for in this article shall see that every necessary *precaution is taken to secure the health and safety of the workmen employed in any of the mines in the state, that the provisions and*

requirements provided for in this article be faithfully observed and obeyed, and the penalties of the law enforced. They shall also collect and tabulate in their report, to be made to the governor on the 15th day of October of each year, the extent of the workable mining lands in this state by counties; also the manner of mining, whether by shaft, slope, or drift, the number of mines in operation, the number of men employed therein, the amount of capital invested and the amount and value of all mine products. (R. S. 1889, § 7072, amended.)

SEC. 8819. Inspector may enter mines at any time, etc.— It shall be lawful for the inspector provided for in this article to enter, examine and inspect any and all mines and machinery belonging thereto, at all reasonable times, by day or by night, but so as not to obstruct or hinder the necessary workings of such mine, and the owner, agent or operator of every such mine is hereby required to furnish all necessary facilities for such entering, examination and inspection; and if the said owner, agent or operator aforesaid shall refuse to permit such inspection or to furnish the necessary facilities for such entry, examination and inspection, the inspector shall file his affidavit setting forth such refusal before the judge of the circuit court in said county in which said mine is situated, either during the term of the court or during vacation, and to obtain an order on such owner, agent or operator so refusing as aforesaid, commanding him to permit and furnish such facilities for the inspection of such mine, or to be adjudged to stand in contempt of court and punished accordingly; and if the said inspector shall, after examination of any mine and the works and machinery pertaining thereto, find the same to be worked contrary to the provisions of this article, or unsafe for the workmen therein employed, said inspector shall, through the circuit attorney of his county, or any attorney in the case of his refusal to act, acting in the name and on behalf of the state, proceed against the owner, agent or operator of such mine, either separately or collectively, by injunction, without bond, after giving at least two days' notice to such owner, agent or operator; and said owner, agent or operator shall have the right to appear before the judge to whom application is made, who shall hear the same on affidavit and such other testimony as may be offered in support as well as in opposition thereto; and if sufficient cause appear, the court, or judge in vacation, by order, shall prohibit the further working of any such mine in which persons may be unsafely employed contrary to the provisions of this article, until the same shall have been *made safe and the requirements of this article shall have been complied with; and the court shall award such costs in the matter of said injunction as may be just; but any such proceedings so commenced shall be without*

prejudice to any other remedy permitted by law for enforcing the provisions of this article. (R. S. 1889, § 7073.)

SEC. 8820. In case of injury or death, right of action.—For any injury to persons or property occasioned by any violation of this article or failure to comply with any of its provisions, a right of action shall accrue to the party injured for any direct damages sustained thereby; and in case of loss of life by reason of such violation or failure as afore said, a right of action shall accrue to the widow of the person so killed, his lineal heirs or adopted children, or to any person or persons who were, before such loss of life dependent for support on the person or persons so killed, for a like recovery of damages sustained by reason of such loss of life or lives: *Provided*, that all suits brought under this article shall be commenced within one year after any cause of action shall have accrued under this article and not afterward; and *provided further*, that any person entitled to sue under this section for loss of life or lives may recover any sum not exceeding ten thousand dollars. (R. S. 1889, § 7074, amended, Laws 1891, p. 182.)

SEC. 8821. Rules of working mines—penalty.—Any miners, workmen or other person who shall knowingly injure any water gauge, barometer, air-course or brattice, or shall obstruct or throw open any airways, or carry any lighted lamps or matches into places that are worked by the light of safety lamps, or shall handle or disturb any part of the machinery of the hoisting engine, or open a door to a mine and not have the same closed again, whereby danger is produced, either to the mine or those at work therein, or who shall enter into any part of the mine against caution, or who shall disobey any order given in pursuance of this article, or who shall do any wilful act whereby the lives and health of persons working in the mine, or the security of the mine or miners, or the machinery thereof, is endangered, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, shall be punished by a fine or imprisonment, at the discretion of the court. (R. S. 1889, § 7075.)

SEC. 8822. Prop timbers.—The owner, agent or operator of any mine shall keep a sufficient supply of timber, when required to be used as props, so that the workmen may at all times be able to properly secure the said workings from caving in, and it shall be the duty of the owner, agent or operator to send down all such props when required. (R. S. 1889, § 7076.)

SEC. 8823. Method of working on the room and pillar plan.—The owner, agent or operator of any coal mine in this state, employing five or more persons, if said mine is worked on the room and pillar plan, shall cause the work in such mine to be prosecuted in the following manner, and none other, to wit: Two entries must be driven parallel for

the ingress and egress of the air, and cross-cuts must be made at intervals not to exceed fifty feet apart, and no rooms, entries or other openings shall be allowed to start inside of the last cross-cut until the next one be made. (Laws 1895, p. 227.)

SEC. 8824. Penalty.—Any owner, agent or operator in charge of any coal mine worked on the room and pillar plan failing to comply with the provisions of section 8823 shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not less than one hundred dollars nor more than one thousand dollars, or by imprisonment in the county jail not less than six months nor more than one year, or by both such fine and imprisonment; and every day that the mine is operated contrary to the provisions of section 8823, after the owner, agent or operator in charge thereof shall have been convicted for a first offense under section 8823, shall be and constitute a separate and distinct subsequent offense, and shall be punished as such. (Laws 1895, p. 227.)

SEC. 8825. Notice to be given by inspector.—The state coal mine inspector shall, after sections 8823 to 8825, inclusive, become a law give notice, in writing, to the owner, agent or operator in charge of each coal mine in this state now being worked on the room and pillar plan, to conform the working of such mine to the requirements hereinbefore set out and prescribed; and such owner, agent or operator shall have thirty days in which to comply before being liable to the penalty provided herein. (Laws 1895, p. 227.)

SEC. 8826. Explosives to be kept in strong box.—All owners, agents or operators of coal mines shall require of all miners or other persons employed in and about a mine, using gun and blasting powder or other explosive, to have and keep a strong box in which all surplus gun or blasting powder or other explosives in the mine shall be kept, excepting so much as is necessary for immediate use. These boxes shall be kept locked, and not opened unless it be to put in or take out powder; nor shall these strong (or powder) boxes be nearer than one hundred feet to place of blasting. And in all dry and dusty coal mines discharging carbonated hydrogen gas, or mines where the coal is blasted off of solid, shot-firers must be employed to fire all shots after the employes and other persons have retired from the mine. (R. S. 1889, § 7077, amended, Laws 1895, p. 226.)

SEC. 8827. Penalty.—Any agent, owner or operator of any coal mine in this state violating the provisions of the preceding section shall be deemed guilty of a misdemeanor, and for each offense on conviction shall be fined not more than two hundred dollars, or by imprisonment in the county jail not less than three nor more than twelve months, or by both such fine and imprisonment. (Laws 1895, p. 226.)

SEC. 8828. Qualifications of miners, etc.—Any person desiring to perform the work of coal miner, and for himself to conduct room, entry or other underground mining in coal mines in this state, shall before being permitted to engage in such work, produce evidence of a satisfactory nature, that he has for two successive years worked in coal mines with or as a practical miner; such applicant to furnish evidence of his experience and qualifications to the coal mine inspector or to the person designated by said inspector to pass upon the competency of such applicant, and until said applicant shall have fully satisfied the coal mine inspector or the party designated by said inspector at the mine wherein such employment is sought, of his fitness to perform the duties as above mentioned, he shall not be allowed to mine coal unless associated with a practical miner for such length of time as will qualify said applicant to safely for himself and others perform underground work, and any owner, agent or operator of any coal mine in this state, who shall knowingly violate any of the provisions of this section, shall be deemed guilty of a misdemeanor, and upon conviction, shall be punished by a fine of not less than fifty dollars nor more than two hundred dollars for each and every offense or by imprisonment in the county jail for a period of not less than thirty days nor more than sixty days, or by both such fine and imprisonment, proceedings to be instituted in any court having competent jurisdiction: *Provided*, that in any case where a party offering to work in a mine, is by the mine inspector or his agent refused the privilege to work, but is nevertheless put to work by the mine operator, and the mine operator be prosecuted for permitting said party to work, it may be lawful for such mine operator to show, by way of defense, that the person put to work was competent to perform the work assigned to him, with safety to himself and his fellow laborers; *and provided further*, that the provisions of this section shall not apply to mines working or employing less than fifteen men: *Provided further*, that the evidence of practical experience, where a miner leaves one mine to seek employment in any other mine in this state, may be certified to by the mine inspector or the person or persons designated by him at the respective mines to pass upon the competency of the applicant, etc., and that such certificate of competency shall be good and sufficient evidence without further examination: *Provided further*, that the judge of the circuit court of the district in which said coal mines are located shall have power to review and set aside the action of the mine inspector or persons designated by him, and the decision of said judge shall be final. (New section.)

Be it enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1. Sections 8793 and 8794 of chapter 133 of article 2 of the Revised Statutes of Missouri, 1899, be and the same are hereby repealed and the following new sections enacted in lieu thereof:

Section 8793. It shall be unlawful for any person or corporation engaged in mining for minerals, coal or any valuable substance, or making excavations beneath the surface of the earth while searching for minerals, coal or any valuable substance, to work their hands or employes at such labor or industry longer than eight hours in a day of twenty-four hours, and it is hereby declared that eight hours shall constitute a day for all laborers or employes engaged in the kind of labor or industry aforesaid.

Section 8794. Any person or persons or corporation who shall violate any of the provisions of the preceding section shall, on conviction be fined in a sum not less than twenty-five nor more than five hundred dollars.

MINES AND MINING: SAFETY AND INSPECTION OF MINES—SIGNALS

AN ACT to repeal section 8811 of article 2, chapter 133 of the Revised Statutes of Missouri of 1899, and enact a new section in lieu thereof.

enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1. That section 88II of article 2 of chapter 133 of the Revised Statutes of Missouri of 1899, is hereby repealed and a new section 88II, to be known as section 88II, is enacted in lieu of the same and the words, to wit:

Section 8811. Signaling—Hoisting—Certain Minors Not to Work
-The owner operator of every mine operated by shaft
use the f e for signaling between the bottom and top
if, to w

whip when in motion, hoist when not in motion.

wh **er.**

- 3 whistles or bells—Hoist mineral
- 4 whistles or bells—Men on cage.
- 5 whistles or bells—Turn on air.
- 5 whistles or bells—Turn off air.
- 6 whistles or bells—Turn on steam.
- 6 whistles—Turn off steam.
- 7 whistles or bells—Mules on.

That the said owner, agent or operator shall provide safe means of hoisting and lowering persons in cage covered with boiler iron, so as to keep safe, as far as possible, persons descending into and ascending out of said shaft; and such cage shall be furnished with guides to conduct it on sides through such shaft, with a sufficient break on every drum to prevent accident in case of the giving out or breaking of machinery; and such cage shall be furnished with spring catches, intended and provided, as far as possible, to prevent the consequences of cable breaking or the loosening or disconnecting of the machinery; no props or rails shall be lowered in cage while the men are descending into or ascending out of said mine: *Provided*, that the provisions of this section in relation to covering cages with boiler iron shall not apply to coal mines less than one hundred feet in depth, where the coal is raised by horse power. No male person under the age of twelve years, or female of any age, shall be permitted to enter any mine to work therein, nor shall any boy under the age of fourteen years, unless he can read and write, be allowed to work in any mine. Any party or persons neglecting or refusing to perform the duties required to be performed by the provisions of this article shall be deemed guilty of a misdemeanor, and punished by a fine in the discretion of the court trying the same, subject, however, to the limitations as provided by section 8815 of this article.

Approved March 22, 1901.

MINES AND MINING: SAFETY AND INSPECTION OF MINES—HEALTH.

AN ACT to repeal section 8818 of article 2 of chapter 133 of the Revised Statutes of Missouri of 1899, and to enact a new section in lieu thereof.

Be it enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1. That section 8818 of article 2 of chapter 133 of the Revised Statutes of Missouri of 1899, is hereby repealed and a new section, to be known as section 8818, is enacted in lieu of the same as follows, to wit:

Section 8818. Health and Safety of Miners—Report to the Governor—Report of Operators to Inspectors.—The inspectors provided for

in this article shall see that every necessary precaution is taken to secure the health and safety of the workmen employed in any of the mines in the state, that the provisions and requirements provided for in this article be faithfully observed and obeyed, and the penalties of the law enforced. They shall also collect and tabulate in their report, to be made to the governor on the 15th day of April of each year, the extent of the workable mining lands in the state by counties; also, the manner of mining, whether by shaft, slope, drift or otherwise, the number of mines in operation, the number of men employed therein, the amount of capital invested and the amount and value of all mine products. And in order that the provisions of this section may be faithfully enforced, it shall be the duty of every mine owner, operator or lessee doing business of a mining nature, embracing lead, zinc, coal, copper, iron or other minerals within this state, to report to the inspector within 20 days following the 1st day of January of each year, the names of the persons, firm, corporation or company doing a mining business, where the mines are located, the number of acres owned or leased of minable lands, the capital invested in lands and plant, the number of shafts, drifts, slopes or open cuts operated, the number of men employed in and about the mines, average wages paid employes, the amount of mineral produced, the average price received for said product and all such other information pertaining to mining as may be required by inspectors; coal mine operators reporting to the coal mine inspectors and the operators of all other mines to the inspector of lead, zinc and other mines upon blanks which the inspectors are hereby authorized to furnish for such purpose; it shall also be the duty of every mine owner or operator doing a mining business in this state, who sells or disposes of such mining property to another person, firm, company or corporation, to furnish to the purchaser or purchasers thereof, a certified statement of the amount and value of all mine products, the average number of men employed and the average wages paid, for that portion of the calendar year that such mining property has been operated; and such purchaser or purchasers shall preserve and incorporate the same in the annual report required under this act; it shall also be the duty of all operators to require of their sub-lessees a monthly statement of the average number of men employed each month and the average wages paid them, that correct accounting may be made of the same in the annual report required; it shall also be the duty of all persons, companies or corporations opening up new mines or mining property to promptly report the same to the inspector.

SEC. 2. When any owner, operator or lessee of any mine within *this state shall fail or refuse to comply with the provisions of section 1 of this article, such offenders shall be deemed guilty of a misdemeanor,*

and upon conviction thereof, shall be fined in a sum not less than one hundred dollars nor more than three hundred dollars for each offense, and the state mine inspector is hereby authorized to certify such failure or refusal to the county prosecuting attorney, in which county the offense was committed, whose duty it shall be to prosecute such offender or offenders.

Approved March 27, 1901.

MINES AND MINING: SAFETY AND INSPECTION OF MINES—EXPLOSIVES.

AN ACT to repeal sections 8826 and 8827, article 2 of chapter 133 of the Revised Statutes of Missouri, 1899, entitled "Safety and inspection of mines," and enact three new sections in lieu thereof.

Be it enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1. That sections 8826 and 8827, article 2 of chapter 133 of the Revised Statutes of 1899, entitled "Safety and inspection of mines," be and the same are hereby repealed, and the following new sections enacted in lieu thereof, which said sections shall read as follows:

Section 8826. All owners, agents or operators of coal, lead, zinc, iron and copper mines, and of granite, stone and other quarries, shall require all miners or other persons employed in and about said mines or quarries, using gun and blasting powder, giant powder, dynamite or other explosives, to have and keep a strong box in which all surplus explosives for use in said mines or quarries shall be kept, except so much thereof as is necessary for immediate use. These boxes shall be kept locked and not opened unless it be to put in or take out said explosives or some part thereof; nor shall these strong boxes be kept nearer than one hundred feet to the place of blasting. And in all said mines and quarries shot-firers or blasters shall be employed to fire all shots after the employes and other persons have retired to a safe distance from the vicinity of said blast or blasts; and after said blasts have been fired, said shot-firer or blaster shall make a thorough examination of all holes charged and ascertain whether the same have been discharged or missed, and shall designate in some way the holes missed or undischarged and report the same to all employes working in the vicinity of such blast or blasts.

Section 8826a. Any person, corporation or association engaged in the sinking of a well or a shaft, whether as owner, agent or employe, in which it is necessary to use blasting powder, dynamite or other explosives and where hoisting apparatus of any kind is used, shall provide and use, or cause to be used, an electric battery and fuses for firing.

all shots of explosives in the shaft, and said shots shall be fired by the battery while placed above ground and connected to the shots by means of a copper wire or other suitable conductor; and no owner, agent or employe engaged in sinking a well or a shaft or operating any mine shall use caps and fuse or any other method of exploding shots than that above specified: *Provided, however*, that the provisions of this and the preceding section shall not apply to lead and zinc mines in which are employed less than ten men underground on any shift, nor to any one engaged in private enterprises other than mining.

Section 8827. Penalty.—Any agent, owner or operator of any coal, lead, zinc, iron or copper mines, and of granite, stone and other quarries in this state violating the provisions of the two preceding sections shall be deemed guilty of a misdemeanor and for each offense, upon conviction, shall be fined not less than fifty nor more than two hundred dollars.

Approved March 27, 1901.

MINES AND MINING: SAFETY AND INSPECTION OF MINES—QUALIFICATIONS FOR MINER.

AN ACT to repeal section 8828, chapter 133, article 2 of the Revised Statutes of 1899 of the State of Missouri, relating to safety and inspection of mines, and to enact a new section in lieu thereof, relating to safety and inspection of mines.

Be it enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1. That section 8828, chapter 133, article 2 of the Revised Statutes of the State of Missouri of 1899 be and the same is hereby repealed and the following new section enacted in lieu thereof:

Section 8828. Any person desiring to perform the work of a coal miner and to for himself to conduct room, entry or other underground mining in coal mines of this state, shall, before being permitted to engage in such work, produce evidence of satisfactory nature that he has for one (successive) year(s) worked in coal mines with or as practical miner; such applicant to furnish evidence of his experience and qualifications to the coal mine inspector, or to the person designated by said inspector to pass upon the competency of such applicant, and until said applicant shall have fully satisfied the coal mine inspector or the party designated by the said inspector at the mine, wherein such employment is sought, of his fitness to perform the duties as above mentioned, he shall not be permitted to mine coal unless associated with a practical miner for such length of time as will qualify said applicant to safely for himself and others perform underground work, and any owner, agent or operator of any coal mine in this state who shall

knowingly violate any of the provisions of this section shall be deemed guilty of a misdemeanor, and upon conviction, shall be punished by a fine of not less than fifty dollars nor more than two hundred dollars for each and every offense, or by imprisonment in the county jail for a period of not less than thirty days nor more than sixty days or by both such fine and imprisonment. Proceedings to be instituted in any courts having competent jurisdiction.

Approved March 12, 1901.

[Com. Sub. H. B. 459]

MINES AND MINING: STATE EXAMINING BOARD.

AN ACT providing for the practical and technical qualifications of mine inspectors, mine managers, mine foreman, assistant mine foreman, mine examiners and hoisting engineers, and for the creation of a state mining board, its qualifications, duties and compensation.

SECTION

1. Creates state board of coal mining.
2. Duty of board as to fitness of persons seeking certificates of competency.
3. Board meets, when—notice—report.
4. Requirements of applicants for appointment of mine inspector.
5. Board to certify to governor names of successful applicants.
6. Requirements of applicants for certificates as mine managers.
7. Requirements of applicants for certificates as foreman.
8. Requirements of applicants for certificate as mine examiner.
9. Requirements of applicants for certificate as hoisting engineer.
10. Certificate of service runs, how long.

SECTION

11. Certificate to set forth, what.
12. Discretion given board as to issuance of certificates.
13. Unlawful to employ manager, foreman or examiner who does not hold certificate.
14. Unlawful to employ hoisting engineer who does not hold certificate.
15. Certificate may be revoked, when.
16. Credentials required of applicants—fee for certificate.
17. Compensation of members of the board.
18. Penalty for violating provisions of act.
19. Application of act.

Be it enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1. That a state board of coal mining is hereby created, composed of three members to be appointed by the governor, one of whom shall be a practical miner, one an expert mining engineer, and who shall, when practicable, be also hoisting engineer and one shall be mine owner. Each member of the board shall serve for a term of two years, or until his successor is appointed and qualified.

SEC. 2. It shall be the duty of said board to make formal inquiry into and pass upon the practical and technical qualifications and personal fitness of persons seeking certificates of competency as mine managers, mine foremen, assistant mine foremen, mine examiners and as hoisting engineers.

SEC. 3. Meetings of the board may be held at any time, and they may make such rules and conduct such examinations as in their judgment *may seem proper* for the purpose of such examinations. Public notice shall be given through the press or otherwise announcing the time

and place at which such examinations are held. The board shall report their action to the commissioners of labor, and at least two of the members thereof shall certify to the qualifications of each candidate who has passed such examination.

SEC. 4. Persons coming before the state mining board as candidates for appointment as state inspectors of mines must produce evidence satisfactory to the board that they are citizens of this state, at least thirty years of age; that they have had a practical mining experience of ten years, and that they are men of good repute and temperate habits; they must also submit to and satisfactorily pass an examination as to their practical and technical knowledge of mining engineering and mining machinery and appliances, of the proper development and operation of mines, of ventilation in mines, of the nature and properties of mine gases, of the geology of the mineral measures in this state and of the laws of this state relating to mines.

SEC. 5. At the conclusion of the examination for inspectors the board shall certify to the governor the names of all successful candidates.

SEC. 6. Persons coming before the board for certificates of competency as mine managers must produce evidence satisfactory to the board that they are at least 25 years old, that they have had at least five years' practical mining experience, and that they are men of good repute and temperate habits, they must also submit to and satisfactorily pass such examination as to their experience in mines and the management of men, their knowledge of mine machinery and appliances, the use of surveying and other instruments, the properties of mine gases, the principles of ventilation and the specific duties and responsibilities of mine managers, as the board shall see fit to impose.

SEC. 7. Applicants for mine foreman and assistant mine foremen shall be at least 25 years of age, shall have had at least five years' practical mining experience, give satisfactory evidence that they are men of good moral character and of known temperate habits. They must also submit to and satisfactorily pass such an examination as to their experience in mines, their knowledge of the properties of mine gases, the principles of ventilation and the specific duties and responsibilities of mine foremen and assistant mine foremen as the board shall see fit to impose.

SEC. 8. Persons seeking certificates of competency as mine examiners must produce evidence satisfactory to the board that they are at least 25 years of age, and of good repute and temperate habits. They must also submit to and satisfactorily pass an examination as to their *experience in mines* generating dangerous gases, their practical and *technical knowledge* of the nature and properties of fire damp, the laws of ventilation, the structure and uses of the safety lamp.

SEC. 9. Persons seeking certificates of competency as hoisting engineers must produce evidence satisfactory to the board that they are at least 21 years of age, that they had at least two years' experience as fireman or engineer of a hoisting plant, and are of good repute and temperate habits. They must submit and satisfactorily pass an examination as to their experience in handling hoisting machinery, and as to their practical and technical knowledge of the construction, cleaning and care of steam boilers, the care and adjustment of hoisting engines, the management and efficiency of pumps, ropes, and winding apparatus, and their knowledge of the laws of this state in relation to signals and hoisting and lowering of men at the mines.

SEC. 10. Applicants giving satisfactory evidence of having had at least five years' continuous experience immediately preceding the examination in one of the following duties, mine manager, mine foreman, assistant mine foreman, mine examiner, hoisting engineer, as the case may be, shall receive a certificate of service, which shall entitle them to continue in the duties of the position they held when said certificate was granted, for a period of two years and no longer: *Provided, however,* any such person holding a certificate of service may at any time apply for and receive a certificate of competency in the manner provided in the preceding sections.

SEC. 11. The certificate provided for in this act shall be issued under the signatures and seal of the state mining board to all those who receive a rating above the minimum fixed by the rules of the board, such certificate shall contain the full name, age and place of birth of the recipient, and the length and nature of his previous service in or about mines.

SEC. 12. The board may exercise its discretion in issuing certificates of any class, but not without examination, to persons presenting with proper credentials, certificates issued by competent authority in other states.

SEC. 13. It shall be unlawful for the operator of any mine to employ, or suffer to serve, as mine manager, mine foreman, assistant mine foreman, or mine examiner, any person who does not hold a certificate of competency or of service issued by a duly authorized board of examiners of this state: *Provided,* that whenever any exigency arises by which it is impossible for an operator to secure the immediate services of a certified mine manager, mine foreman, assistant mine foreman, mine examiner, as the case may be, he may place any trustworthy and experienced man, subject to the approval of the state mine inspector, to act temporarily for a period not to exceed ten days.

SEC. 14. *It shall be unlawful for the operator of any mine to*

employ, or suffer to serve, as hoisting engineer of said mine, any person who does not hold a certificate of competency or service issued by a duly authorized board of examiners of this state, to permit any other person to operate his hoisting engine except for the purpose of learning to operate it and then only in the presence of the certificated engineer in charge, and when men are not being hoisted or lowered: *Provided*, that whenever any exigency arises by which it is impossible for any operator to secure the immediate services of a certified hoisting engineer, he may place any trustworthy and experienced man, subject to the approval of the state mine inspectors, in charge of his engines to act as temporary engineer, for a period not to exceed 30 days.

SEC. 15. The certificate of any manager, mine foreman, assistant mine foreman, hoisting engineer or mine examiner may be cancelled and revoked by the state mining board whenever it shall be established to the satisfaction of said board that the holder thereof has become unworthy of official endorsement, by reason of violation of the law, intemperate habits, manifest incapacity, abuse of authority, or for other causes satisfactory to said board: *Provided*, that any person against whom charges of complaints are made shall have an opportunity to be heard in his own behalf, and he shall have thirty days' notice in writing of such charges.

SEC. 16. An applicant for any certificate herein provided for, before being examined, shall register his name with the secretary of the board, and file with him the credentials required by this act, to wit: an affidavit as to all matters of fact establishing his right to receive the examination, and a certificate of good character and temperate habits signed by at least ten of the citizens in the place in which he lived. Each candidate, before receiving the examination, shall pay to the secretary of the board the sum of one dollar as an examination fee, and those who pass the examination for which they are entered, before receiving their certificates, shall also pay to the secretary the further sum of two dollars each as a certificate fee. Also persons receiving certificates of service shall pay the sum of two dollars as certificate fee. All such fees shall be duly accounted for by the board and paid into the state treasury at the close of each fiscal year.

SEC. 17. The members of the state mining board shall receive as compensation for their services the sum of five dollars per day, for a term of not exceeding thirty days in any year, and whatever sums are necessary to reimburse them for such traveling and all necessary

expenses as may be incurred in the discharge of their duties. All such salaries and expenses of the said board shall be paid upon vouchers duly sworn by each and approved by the president of the board and by the governor, and the auditor of public accounts is hereby authorized to draw his warrants on the state treasury for the amount thus shown to be due, payable out of any money in the treasury not otherwise appropriated.

SEC. 18. Any owner, agent, operator or managing officer of any coal mine to which this act applies found guilty of violating any of the provisions of this act shall be punished by a fine not exceeding five hundred dollars or less than one hundred dollars or by imprisonment in the county jail not exceeding six months or by both fine and imprisonment in the discretion of the court.

SEC. 19. The provisions of this act shall apply only to coal mines.

Approved April 4, 1903.

MINES AND MINING: INSPECTORS.

AN ACT to amend section 8817, article 2, chapter 133, Revised Statutes of the State of Missouri, 1899, relating to the establishment of the bureau of mines, mining and mine inspection, and the appointment of mine inspectors, with emergency clause.

SECTION

1. Governor to appoint inspectors—qualifications—salaries, appointment of secretary—salary.

SECTION

2. Emergency clause.

Be it enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1. That section 8817 of article 2, chapter 133, Revised Statutes of the State of Missouri, 1899, is hereby amended by striking out all of said section after the word "capitol," in the third line of said section, and inserting in lieu thereof the following words: "The governor shall, for the inspection of coal mines, appoint an inspector and one assistant to the same, both of whom shall have been practical miners in coal mines: For lead, zinc and mines other than coal mines the governor shall appoint two inspectors, both of whom shall have had practical experience in lead and zinc mining: one of said inspectors shall be appointed to serve in the western lead and zinc district and the other [inspector] in the eastern lead and zinc district. Said districts in the lead and zinc field to be divided from north to south through the state by a line which will border the western boundary line of Cooper and Webster counties. Neither

of the above-named inspectors shall be interested in any mine and each shall receive a salary of of \$1,500.00 per annum, and there shall also be allowed and paid out of the [general] revenue fund the actual traveling expenses of the inspectors. The inspectors so appointed shall have authority to appoint a secretary of the bureau of mines, mining and mine inspection, who, in addition to his other qualifications shall, be a competent draughtsman and receive a salary of \$1,500.00 per annum;" so that the section, as amended, shall read as follows:

Section 8817. The Bureau of Mines Established, Etc.—There is hereby created a department to be known as the bureau of mines, mining and mine inspection, with its office located at the state capitol. The governor shall, for the inspection of coal mines, appoint an inspector and one assistant to the same, both of whom shall have been practical miners in coal mines. For lead, zinc and mines other than coal mines the governor shall appoint two inspectors, both of whom shall have had practical experience in lead and zinc mining; one of said inspectors shall be appointed to serve in the western lead and zinc district and the other inspector in the eastern lead and zinc district. Said district in the lead and zinc field to be divided from north to south through the state by a line which will border the western boundary of Cooper and Webster counties. Neither of the above-named inspectors shall be interested in any mine and each shall receive a salary of \$1,500.00 per annum, and there shall also be allowed and paid out of the general revenue fund the actual traveling expenses of the inspectors. The inspectors so appointed shall have authority to appoint a secretary of the bureau of mines, mining and mine inspection, who, in addition to his other qualifications, shall be a competent draughtsman and receive a salary of \$1,500.00 per annum.

Sec. 2. The fact that close inspection is at once needed for the health and safety of the miners, creates an emergency, and this act shall, therefore, take effect and be in force from and after its passage.

Approved April 13, 1903.

MINES AND MINING: WAGES.

Section 8791, article 2, chapter 133 of the Revised Statutes of Missouri, entitled "Mines and mining," and to enact two new sections in the same to be known as sections 8791 and 8791a. to be paid semi-monthly—Inconsistent acts repealed.

be it enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1. That section 8791, article 2, chapter 133 of the Revised Statutes of Missouri of 1899 is hereby repealed and two new sections enacted in lieu thereof, to be known as sections 8791 and 8791a, which shall read as follows:

Section 8791. All persons or corporations engaged in or operating any mines, stone or granite quarries in this state shall pay their employes once in every fifteen days in lawful money of the United States, and at no pay day shall there be withheld any of the earnings due any such employe: *Provided*, persons or corporations operating coal mines may withhold not to exceed five days of the earnings of employes. Any such operator or employer failing or refusing to pay his employes, their agents or assigns or anyone duly authorized to collect such wages as in this section provided, shall become immediately liable to such employe, his agent, assigns or anyone authorized to collect such wages for an amount double the sum due such employes at the time of such failure or refusal to pay the amount due, to be recovered by civil action in any court of competent jurisdiction within this state.

Section 8791a. All acts or parts of acts inconsistent with the provisions of this act are hereby repealed.

Approved March 23, 1903.

[H. B. 25.]

MINES AND MINING: SAFETY AND INSPECTION OF MINES—EXPLOSIVES.

AN ACT to repeal an act entitled an act to repeal sections 8826 and 8827, article 2, chapter 133 of the Revised Statutes of Missouri, 1899, entitled "Safety and inspection of mines," and enact three new sections in lieu thereof, approved March 12, 1901, and to enact two new sections in lieu thereof.

SECTION 1. Explosives to be kept in strong box—shot-firers to be employed—penalty.

be it enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1. That an act to repeal sections 8826 and 8827, article 2, of chapter 133 of the Revised Statutes of Missouri, 1899, entitled "Safety and inspection of mines," and enact three new sections in lieu thereof, approved March 12, 1901, be and the same is hereby repealed and the following new sections enacted in lieu thereof:

Section 8826. Explosives to Be Kept in a Strong Box—Shot-firers to Be Employed.—All owners, agents or operators of coal mines shall require of all miners or other persons employed in and

about a mine, using gun, blasting powder or other explosives, to have and keep a strong box in which all surplus gun, blasting powder or other explosives in the mine shall be kept, excepting so much as is necessary for immediate use. These boxes shall be kept locked and not opened unless it be to put in or take out powder. Nor must these strong (or powder) boxes be kept nearer than one hundred feet to the place of blasting. And in all dry and dusty coal mines discharging light carbonated hydrogen gas, or in mines where the coal is blasted off of the solid, shot-firers must be employed by the operator of said mine or mines, to fire all shots after the employes and other persons have retired from the mine. And all shots prepared by the miner for the extraction of coal from off of the solid, must be so placed, drilled and charged, that the same, when fired, shall perform safely the duty required of such shots; but if the shot-firers find or discover that a drill hole is gripping too much or that it is drilled too much into (what the miners term) "the tight," and as may in the judgment of the shot-firers, prove a windy, blown-out or otherwise dangerous shot, said shot-firers shall there and then condemn such shot as too dangerous to fire and pass the same without firing it. It shall also be the duty of the shot-firers to notify the mine foreman as soon as practicable, when a shot is condemned, who shall in turn attract the attention of the miner or miners responsible for the preparation of said condemned shot and said miner or miners shall immediately after returning to work provide the necessary remedy to render the said condemned shot harmless.

Section 8827. Penalty.—Any agent, owner or operator of any coal mine in this state violating the provisions of the preceding section shall be deemed guilty of a misdemeanor, and for each offense, on conviction, shall be fined not less than one hundred dollars nor more than two hundred and fifty dollars or by imprisonment in the county jail not less than six months nor more than one year or both such fine and imprisonment. Proceedings to be instituted in any courts having competent jurisdiction.

Approved March 10, 1903.

LAWS PASSED IN 1905.

[H. B. 645.]

MINES AND MINING: LABOR.

AN ACT to prevent persons, companies and corporations from working laborers in mills, reduction plants, refineries, smelters and all other institutions for the crushing, or separating, or reduction, or refining of minerals and ores, more than eight hours in a day of twenty-four hours, and fixing eight hours as a day for such laborers, and repealing sections one and two of an act of the General Assembly, approved March 9, 1903, Session Acts, 1903, page 219, entitled "An act to prevent persons and corporations from working laborers in smelters and all other institutions for the reduction or refining of ores, more than eight hours in a day of twenty-four hours, and fixing eight hours as a day for such laborers," and enacting this act in lieu thereof.

SECTION

1. Prohibits persons and corporations from working laborers in smelters or other reduction or refining works more than eight hours a day.

SECTION

2. Penalty for violation.
3. Sections 1 and 2 of previous act repealed.

Be it enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1. It is hereby declared to be unlawful for any person, company or corporation engaged in carrying on any kind of mining, mechanical, chemical, manufacturing or smelting business, to work their employes in any mill or mills, or plants, while engaged in crushing rocks and mine products, containing mineral or ores, or engaged in separating the minerals or ores from rock and such combination with which the mineral or ores are mixed, or reducing or roasting, or refining or smelting minerals or ores, from and after the time such rocks, or combination of rocks and mine products, or minerals or ores are taken out of the mines, at such labor or industry, for a period of time longer than eight hours in a day of twenty-four hours, and it is hereby declared that eight hours shall constitute a day of employment, for all laborers, or employes, engaged in the kind of labor or industry aforesaid.

SEC. 2. Any person or persons, company or corporation who shall violate any of the provisions of the preceding section shall, on conviction, be fined in a sum not less than twenty-five dollars nor more than five hundred dollars.

SEC. 3. That sections one and two of the act of the general assembly of the state of Missouri, approved March 9, 1903, entitled "An act to prevent persons and corporations from working laborers in smelters and all other institutions for the reduction or refining

ores more than eight hours in a day of twenty-four hours, and fixing eight hours as a day for such laborers," is hereby repealed, and this act enacted in lieu thereof.

Approved April 10, 1905.

S. S. 233.]

MINES AND MINING: SAFETY AND INSPECTION OF MINES.

AN ACT to amend article 2 of chapter 133 of the Revised Statutes of Missouri of 1899, entitled "Safety and inspection of mines," by enacting a new section, to be known as section 8801a.

SECTION 1. Ventilation—separate air currents required.

Be it enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1. That article 2 of chapter 133 of the Revised Statutes of Missouri of 1899 be, and the same is hereby amended by enacting a new section, to be known as section 8801a, and to read as follows:

Section 8801a. Ventilation—separate air currents required.—Every owner, agent or operator of every coal mine, whether operated by shaft, slope or drift, employing more than fifty persons in such mine, shall on and after the first day of September, 1905, in providing and maintaining the ventilation required by section 8801 of article 2, chapter 133, of the Revised Statutes of Missouri of 1899, split the volume of air circulating in such mine into separate currents, so that not more than fifty persons working in such mine shall be supplied by the same current of air.

Approved March 13, 1905.

MINES AND MINING: SIGNALING AND HOISTING—CERTAIN MINERS NOT TO WORK.

AN ACT to amend section 8811, article 2, chapter 133, Revised Statutes of the state of Missouri of 1899, relating to the safety and inspection of mines.

SECTION 1. Amends section 8811, R. S. Certain miners not to work.

Be it enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1. That section 8811, article 2, chapter 133, Revised Statutes of Missouri of 1899, be and the same is hereby amended by striking out the word "twelve," in the fifteenth line of said section, and inserting in lieu thereof the word "fourteen;" and by striking out the word "fourteen," in the eighteenth line of said section.

section, and inserting in lieu thereof the word "sixteen;" so that said **section**, when amended, shall read as follows:

Section 8811. Signaling—hoisting—certain miners not to work, etc.—The owner, agent, or operator of every mine' operated by shaft shall provide suitable means of signaling between the bottom and the top thereof, and shall also provide safe means of hoisting and lowering persons in a cage covered with boiler iron, so as to keep safe, as far as possible, persons descending into and ascending out of said shaft; and such cage shall be furnished with guides to conduct it on slides through such shaft, with a sufficient break on every drum to prevent accident in case of the giving out or breaking of machinery; and such cage shall be furnished with spring catches, intended and provided, as far as possible, to prevent the consequences of cable breaking or the loosening or disconnecting of the machinery; and no props or rails shall be lowered in a cage while men are descending into or ascending out of the mine: *Provided*, that the provisions of this section in relation to covering cages with boiler iron shall not apply to coal mines less than one hundred feet in depth, where the coal is raised by horse power. No male person under the age of fourteen years, or female of any age, shall be permitted to enter any mine to work therein; nor shall any boy under the age of sixteen years, unless he can read or write, be allowed to work in any mine. Any party or person neglecting or refusing to perform the duties required to be performed by the provisions of this article shall be deemed guilty of a misdemeanor, and punished by a fine in the discretion of the court trying the same, subject, however, to the limitations as provided by section 8815 of this article.

Approved April 3, 1905.

RECAPITULATION OF THE MINERAL PRODUCTS

Counties producing minerals.	No. of acres.....	Capitali- zation.	Number shafts op- erated.....	Zinc ores.		Lead ore.	
				Tons of zinc mined.....	Valuation...	Tons mined.	Value.....
Adair.....			21				
Audrain.....			7				
Barry.....	820	\$50,000	1	212	\$6,696		
Barton.....			18				
Bates.....			28				
Benton.....	840	500,000	11	188	5,678	50	\$2,725
Boone.....			12				
Butler.....							
Caldwell.....			1				
Callaway.....			6				
Camden.....	2,400		5			81	3,952
Carter.....							
Carroll.....			4				
Cass.....			1				
Cedar.....			3				
Chariton.....			2				
Christian.....	240	55,000	3	276	9,877	95	5,085
Clay.....			1				
			5				
Cole.....	1,864	30,000	1			120	6,654
Cooper.....			1				
Crawford.....	2,700	60,000	2			27	1,377
			2				
Dade.....	2,800	65,000	2	140	4,880	60	3,210
Dent.....	1,700	1,000,000					
Franklin.....	5,000	27,000	2			1,362	65,071
Gasconade.....							
Greene.....	484	72,000	5	1,350	48,000	480	28,400
Grundy.....			1				
Henry.....			16				
Hickory.....	200	22,000	3	12	396	17	816
Howard.....			2				
Howell.....	1,700	62,000	1	4,115	49,880		
Iron.....							
				2,890			
Jasper.....	16,986	31,212,875	537	199,623	7,317,138	27,891	1,552,474
Jackson.....			1				
Jefferson.....	7,000	200,000	50	1,475	17,700	461	23,297
Johnson.....			4				
Lafayette.....			41				
						D. B.	
Lawrence.....	1,588	4,115,000	38	13,579	431,898	942	
Linn.....			8			160	36,579
Livingston.....			2				
Madison.....	40,800	4,600,000	8			9,153	440,846
Macon.....			19				
Miller.....	1,760	27,000	2			30	1,500
Moniteau.....	1,150	150,000	2	213	7,863	187	11,864
Monroe.....			2				
Morgan.....	440	56,000	5	90	3,240	190	9,880
Montgomery.....			2				
						D. B.	
Newton.....	16,871	4,490,000	112	10,899		183	
Oregon.....	500	10,000		8,731	851,688	1,517	91,229
Osage.....	160	8,000		30	360		
Ozark.....	900	15,000		60	660		
Phelps.....							
Platte.....							
Putnam.....			13				
Ralls.....			5				
Randolph.....			20				
Ray.....			35				
Ripley.....							
St. Clair.....	820	4,000	4				
St. Francois.....	44,700	19,600,000	21			89,854	4,088,094
Schuyler.....			4				
Shannon.....							
Vernon.....			10				
Washington.....	49,854	4,558,625	25	15½	217	2,684½	125,123
Webster.....	160	2,500	1			32	1,472
Wright.....	890	7,500	2			51	2,820
	202,227	\$70,994,000	1,141	238,893	\$8,255,174	135,027	\$6,451,418

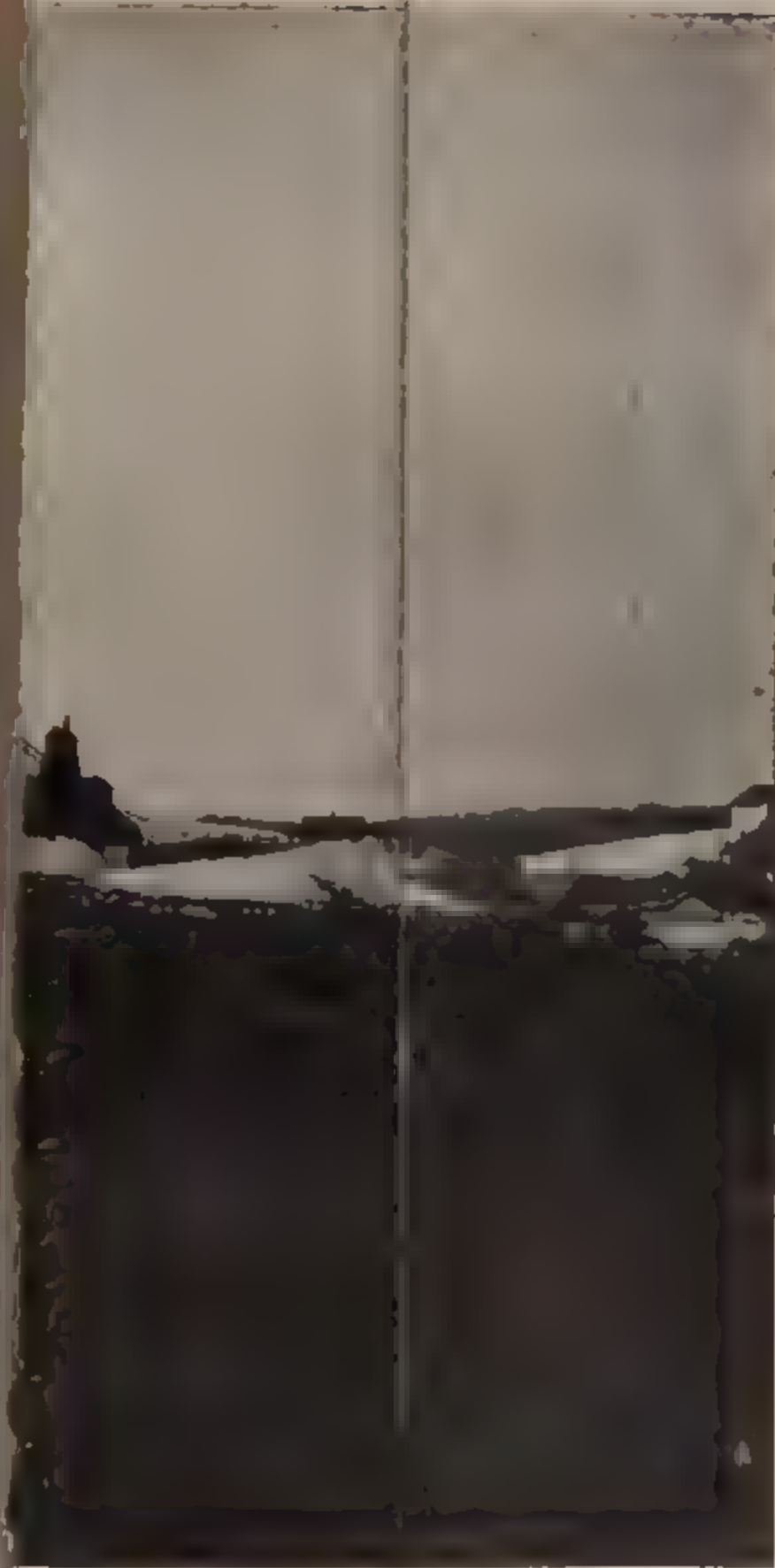
*Deduct value of pig-iron, the amount shown simply entered to attract attention to our

Add value of cement, lime-rock, clays, marble, granite and building materials
Total value of products from mines and quarries for the eighteenth line of

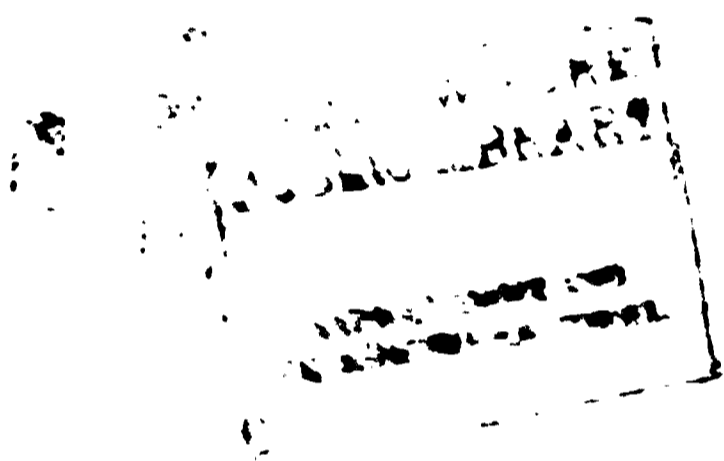
MISSOURI FOR THE YEAR 1904—BY COUNTIES.

Value of ores mined.			Baryta, Kaolin, Tripoli.	Coal mined.		Total value of all minerals.	Total number of all employees....
Nickel.....	Copper.....	Iron ore.....		Tons.....	Value.....		
				658,558	\$991,475	\$991,475	1,484
				42,578	76,580	76,580	185
						6,096	8
				199,978	270,860	270,860	217
				152,495	212,801	212,801	276
			1,050			9,448	12
				85,865	65,408	65,408	100
		\$7,785				7,785	14
				11,866	25,140	25,140	59
				19,754	39,448	39,448	84
			B 1,462			5,414	11
		1,584				1,584	5
				604	1,510	1,510	6
				4,173	8,847	8,847	12
				880	545	545	8
				625	1,875	1,875	8
		14,000				28,412	60
				82,400	64,800	64,800	97
			B 2,228	1,000	4,000	12,877	5
				500	1,875	1,875	4
	\$1,839	127,500	B 162			180,716	62
				2,286	4,000	12,040	26
		*482,000				*482,000	620
		4,402	B 8,142			72,615	60
		185				185	2
						76,400	69
				18,647	85,482	85,482	25
				118,967	212,284	212,284	327
						1,218	6
		12,150		2,694	6,874	6,874	16
		276				61,580	49
						276	2
						8,869,607	7,254
				8,848	8,875	8,875	16
			B 8,021			44,018	115
				4,189	7,117	7,117	14
				718,677	1,280,581	1,280,581	1,084
						468,477	475
				102,205	229,156	229,156	287
				1,589	8,518	8,518	7
\$25,882	\$5,056			899,968	1,879,966	500,992	494
						1,879,966	1,098
			B 259				
			K 1,125			2,884	16
			172			20,266	25
				576	864		
				1,682	4,206	4,206	7
			K 1,280	4,200	6,720	21,100	28
				2,871	5,929	5,929	8
			T 88,000				
						480,917	1,117
						360	2
		85				85	1
						660	8
		1,980				1,980	4
				126,217	258,697	258,697	259
				70,118	125,853	125,853	376
				16,902	29,661	29,661	54
				578,895	887,786	887,786	1,391
				225,485	454,765	454,765	823
		1,859				1,859	3
				1,229	2,483	2,483	4
		14,944	B 33,412			4,086,450	3,566
				21,860	38,855	38,855	65
		7,875				7,875	7
			B 131,741	173,571	262,877	262,877	253
						257,081	210
						1,472	3
						2,820	7
\$25,882	\$6,895	\$626,525	\$217,029	4,241,912	\$7,008,078	\$22,675,048	23,482
pig-iron		482,000				482,000	
		\$194,525				\$22,243,048	
						4,218,426	
						\$26,461,474	

WESTERN LEAD AND ZINC DISTRICT.



NG CAMP NEAR JOPLIN.



WESTERN DISTRICT.

This district is composed of the following named counties: Barry, Benton, Christian, Dade, Greene, Hickory, Jasper, Lawrence and Newton. There are 37,515 acres of land owned and leased for mining purposes, on which 716 shafts have been sunk and in actual operation during the year. These shafts range between thirty and two hundred and fifty feet in depth.

The capitalization, as reported by the companies, firms and individuals operating in the district, shows a total of \$40,581,375. The zinc ores of all grades mined in the district during 1904 amounted to 432,978,000 pounds. Silicates show a production of 31,812,000 pounds, or a total for all of 464,790,000 pounds, an increase of 50,944,000 pounds over 1903, or 12.33 per cent. The value of the product, however, shows a far greater percentage of increase, as the output for 1903 sold for \$6,727,797, while for 1904 it reached the sum of \$8,175,751, an increase of \$1,447,954, or 21.52 per cent.

The prices received for zinc ores were better than for the previous year. The best grades sold for as much as \$53.00 per ton, the average price for all grades was \$36.46 per ton and the silicates averaged \$19.50 per ton, showing an average increase of \$3.19 per ton of zinc ore mined.

Lead ores were mined in each county of the district except Barry, the total product being 60,138,000 pounds. Dry-bone shows an output of 2,552,000 pounds, or a total of 62,690,000 pounds, an increase of 14,204,000 pounds, or 29.29 per cent.

Prices ranged better throughout the year than they did in 1903, with an average of \$55.91 per ton of lead ore and \$30.74 per ton of dry-bone, an increase in the price of lead ore of \$3.22 per ton over 1903. The value of the lead ore product for 1903 was \$1,265,437, while for 1904 the value was \$1,720,469, an increase of \$455,032, or 36.04 per cent. The district thus showing an increase in the value of its lead and zinc production of nearly two million dollars, in round numbers, over the year 1903.

The district produced other than lead and zinc ores. The value of its iron ore products was \$14,000. Tripoli, produced only in this district, was valued at \$38,000, and baryta, \$1,050. These productions, added to the lead and zinc, give a value of \$9,949,270. We then add the value

clay, lime rock and building stone, mined and quarried in the district, and valued at \$1,090,744, which gives the total value of \$11,040,014, as the result of its mines and quarries for 1904.

There were employed in the district during the year as miners, top men, mill men and those engaged in prospect work, a total of 8,952 men.

Accidents show favorably with other years by comparison, there having been 24 fatal and 8 non-fatal, or a total of 32 accidents during the year. Operators are largely responsible for the better showing, as the miners are undoubtedly under better supervision and greater efforts have been displayed than ever before to prevent accidents.

Some methods are still employed in the mines of the district which are out of date and dangerous. It is hoped that the operators who are, in the majority of instances, so progressive otherwise, will take the hint and add such further improvement as will lessen still further the chances for accident.

There are nine counties in this district which produced lead and zinc ores during the year which sold for \$9,869,220, but out of these nine counties Jasper, Lawrence and Newton produced the entire amount, less \$130,267. Out of the 716 shafts in the district, 689, or 96 per cent, were operated by these counties. The district covers far less territory than the other, or Eastern, still there are many more mines in this district. Fortunately, however, a radius of 25 miles from Joplin will embrace 92 per cent of all the mines, and easy of access at that. Joplin, Webb City, Cartersville and their immediate surroundings take in nearly all of the great producing mines.

Comparisons are said to be odious, but a comparison of the last decade, with reference to the output and value of lead and zinc ores in this district, is rather more odorous than odious. For the year 1895 we find the zinc ore product amounted to 202,393,980 pounds; for 1904 the product amounts to 464,790,000 pounds, showing an increase of 262,396,020 pounds, or 129.64 per cent. The value of the products, however, show a much wider difference than the great difference in output. In 1895 lead and zinc ores were valued at \$1,705,822, but for 1904 the value of the two ores was \$8,175,751, an increase of \$6,469,929, or 385.09 per

In 1895 the price per ton of all grades of zinc ore was \$18.12, as \$36.40 in 1904, for same grades, or a little over 102.14 per cent.

in 1895 averaged \$10.05 per ton, while in 1904 they averaged an increase of \$9.45 per ton, or 94.29 per cent.

Lead ores in 1895, for the district, shows a production of 42,008,000 pounds, while the lead ore product for 1904 was 60,138,000 pounds, an increase of 18,130,000 pounds in output, or 43.16 per cent. The great difference, however, is in the price received for the ore during the decade.

In 1895 the lead ore product averaged but \$30.10 per ton, while in 1904 it averaged \$55.91, which shows an increase of \$25.81 per ton, or 85.71 per cent.

This district is pre-eminently the zinc-producing section of the State; therefore, it is the zinc output which becomes most prominent in matters of relative difference in the past ten year. The figures are astonishing, when one begins to study them, both as to production and values. The production has increased 129.64 per cent, or from 202,393,980 pounds to 464,790,000 pounds. The prices for this ore has increased from \$18.12 per ton to \$36.46 per ton, or 102.14 per cent, with a value showing an increase of \$6,469,929, or 385.09 per cent.

The astonishing growth of the lead and zinc industry of the district has been so steady and uninterrupted in its gradual advance that it would appear the industry had failed of the appreciation due to it by the citizens of the district. It is well enough to remind some of the good people of the Western District occasionally what it is that is so rapidly building their cities, furnishing unexcelled transportation, enhancing the value of every class of property, in spite of the lack of personal effort of the great body of its citizens.

Every land owner, first lessee and sub-lessee will be mailed a blank for a report of the business of 1905.

All land owners, whether operating a mine upon his land or not, will be mailed a blank. The blank, in this instance, will be a simple one, with very little of detail. The first lessee, when he does no actual mining, but simply sub-leases, will have very little trouble in making report; where, however, he does actual mining, his report will be similar to those furnished sub-lessees. The law requires that reports, as above, shall be returned to the Jefferson City office not later than January 20 of each year. It is our duty to secure these reports, and the same will be insisted upon, so that prompt attention will avoid much trouble for operators and the inspector.

JASPER COUNTY.

One feels lost in the effort to record something new relative to this county. Every feature in connection with its mining lands, mines, its past accomplishments and its future possibilities, have been so thoroughly portrayed that there remains apparently nothing more to be written about it. There occurs to us but one exception in the above statement, that is, with each succeeding year, its results point unmistakably to its wonderful capacity to out-do the former year in the production of lead and zinc, no matter what the product has been. All of which but emphasizes the immensity of its ore bodies. A certain level is worked over leaving the impression that the ore is exhausted; gradually another

level is struck, more pumps are added and mining continues with even more vigor and greater results than formerly. The present indicates a still deeper level largely upon ground heretofore worked and since regarded as abandoned territory, larger pumps are installed as the old shafts reach the lower level, and how long this experience may be repeated is not within our province to determine. We hope the ore runs may continue until the lowest level demonstrated by the drill has been worked.

We find the increased production of zinc ore in this county for 1904 over 1903 to be 50,948,000 pounds, or 14.39 per cent. That the increase in the value of the ore over 1903 was \$1,439,872, or 24.50 per cent. The increase in the lead product for the same period was 13,834,000 pounds, or 32.90 per cent, while the increase in the value of the lead ore product of 1904 over 1903 was \$493,638, or 39.42 per cent. The increase in the value of the lead and zinc ore production for 1904 over 1903 shows a total of \$1,879,555, or 26.88 per cent. Such increases for one county in a single year, considering the volume of business done, would be considered marvelous in all other lines of business except mining in the Joplin district.

To further indicate the growth of the mining industry in this county let us make a comparison covering the last decade. In 1895 Jasper county mined 142,846,000 pounds of zinc ore averaging \$18.17 per ton and its silicate \$13.45, with a total value for the ores amounting to \$1,337,865. In 1904 the output of zinc ores amounted to 405,026,000 pounds, showing an increase over 1895 of 261,617,000 pounds, or 182.42 per cent; and an increase in the value of the ore of \$5,979,268, or 447 per cent. The price of zinc ore in 1904 averaged \$36.46 per ton for all grades and showing an increase of \$18.29 per ton or a little over 100 per cent. The lead ore production of this county in 1895 was 30,910,000 pounds; it averaged \$32.95 per ton and its value amounted to \$509,185. In 1904 the county produced 45,782,000 pounds of lead ore, which averaged \$56.00 per ton, and amounting to \$1,552,474. This shows an increase in the price received for lead ore in 1904 of \$23.05 per ton, or 70 per cent. The value of the lead ore shows an increase of \$1,043,289, or 204.90 per cent. The total value of the lead and zinc product in 1895 was \$1,847,049; in 1904 it amounted to \$8,869,607, showing an increase of \$7,022,558, or 380.20 per cent.

If the fake promoter with his excessive capitalization and speculative methods could be eliminated from this county, it would prove a great blessing. Jasper does not need artificial aid in promoting its *mining industry*; the legitimate and actual business done within its *boundaries* is sufficient and ample for all practical purposes.

ACME LEAD AND ZINC CO.

The Acme Lead and Zinc Co., with its postoffice at Webb City, Mo., controls 640 acres of land, located in sections 31, 32 and 33, township 28, range 32. The company is incorporated for \$300,000 under the laws of Missouri. J. C. Stewart, president; W. C. Stewart, secretary. It does no actual mining as a company, but leases its land to operating concerns.

J. M. KERR.

Mr. Kerr holds a first lease on this property and in turn makes a sub-lease to the

CUSHING-WEBB CITY OIL AND MINING CO.

This latter company is incorporated under the territory law of Oklahoma for \$125,000. D. D. McHenry, president, and C. C. Lyon, secretary, with postoffice address at Cushing, Oklahoma. The Cushing-Webb City Oil and Mining Company has just completed a fully equipped concentrating plant of 100 tons daily capacity. Four drifts have been opened up in ore, each having a 16-foot face. The company was employing at the close of the year 20 men, 15 of whom were mining and five prospecting. No ore was sold in 1904.

ALDRICH & CO.

This company, composed of Jos. E. Aldrich, F. F. Rose and E. W. Kelly, with postoffice at Joplin, Mo., own 20 acres of land, which it leased to

MIKE GRUNDLING,

Whose postoffice is also at Joplin.

The sub-lessees of this property are:

L. CHAMBERS, E. H. DICKINSON, CRAIG & JESTER, NEAL & CO.

The address of these sub-lessees is at Joplin. They are working the property at present with an average force of nine miners and four other employes. The lessees are operating with one concentrating plant with a capacity of fifty tons per day. There are three mines on the lease, with shafts 50 feet in depth, respectively. Four steam boilers supply power for these mines; one engine, two steam jigs, three steam and one horse hoister and one ore crusher are being used. The product of the mines for the year sold for \$10,848.

AMERICAN ZINC, LEAD AND SMELTING CO.

This company is one of the large producers in Jasper county. It controls 4,000 acres of land, of which 2,300 acres are owned in fee by the company, and 1,700 acres are leased from Daugherty, Davey & Daugherty and Phelps, Davey and others. This great body of land is located near and contiguous to the three great ore producing cities of Joplin, Webb City and Carterville of Jasper county, Mo. This company is incorporated under the laws of the State of Maine for \$2,500,000. The company at one time made reports in such way as to make it an easy matter to record the different tracts operated by it, but the last report made is confusing, requiring unusual care to shape it up intelligently. The tracts as now reported are as follows:

Hocaday tract—A. Z., L. & S. Co.

Midway tract—A. Z., L. & S. Co.

Porter tract—A. Z., L. & S. C.

December tract—A. Z., L. & S. Co.

American-Richland tract—A. Z., L. & S. Co.

American-Richland lease—A. Z., L. & S. Co.

Luke & Ash, first lessees—A. Z., L. & S. Co.

J. B. Moore, first lessee—A. Z., L. & S. Co.

LEASED LANDS.

Daugherty & Davey land—American Zinc, Lead and Smelting Co., first lessee.

Davey, Phelps & Co. land—American Zinc, Lead and Smelting Co., first lessee.

The following is a summary of the product and its value, plants and machinery in use on both the land owned and leased by the company:

Twenty-nine shafts, 7,999 tons of zinc ore, 498 tons of silicate, 1,946 tons of lead ore, 7 tons of dry-bone; total value of the product, \$367,169. The total number of men employed as miners, mill and other help was 405. There were in use during the year 18 concentrating and 18 hand jig plants, 33 boilers, 16 pumps, 11 air compressors, 27 steam and 14 horse hoisters, 20 crushers, 62 steam and 34 hand jigs.

MIDWAY TRACT.

This tract embraces 200 acres owned in fee by the American Zinc, Lead and Smelting Co., and 17 acres leased from Phelps, Davey and others. The sub-lessees on this tract are as follows:

Dividend Mine—17 acres, paying royalty of 10 per cent.

C. D. Newham Mining Co.—6 acres, paying royalty of 15 per cent.

F. T. Fish—12 acres, paying royalty of 10 per cent.

Terra Cotta Mining Co.—20 acres, paying royalty of 10 per cent.

Roy Gale & Co.—6 acres, paying royalty of 15 per cent.

Sassafras Mining Co.—12 acres, paying royalty of 10 per cent.

On this tract the production for the year 1904 was 1,941 tons of zinc ore, 283 tons of silicate, $38\frac{1}{2}$ tons of lead ore and 7 tons of dry-bone, which sold for \$76,077.

DIVIDEND MINING CO.—MIDWAY TRACT.

This company controls a lease of 17 acres, is incorporated for \$100,000 under the laws of the State of Missouri, and has for its president N. L. Amster, and its treasurer, G. H. Flint, with postoffice at Carterville, Mo. The equipment consists of one concentrating plant, 100 tons capacity, one set steam jigs, boiler, engine, two steam pumps, steam drill, two steam hoisters, crusher, one Wilfley table. The company employs 12 miners and six top men, and the production last year was 500 tons of zinc ore and 2,020 pounds of lead ore, valued at \$18,060.50.

C. D. NEWHAM MINING CO.—MIDWAY TRACT.

The C. D. Newham Mining Co. is a first lessee from the American Zinc, Lead and Smelting Co. of six acres on the Midway tract; the same having been transferred to it by James Sweitzgood. While there appears to be a number of sub-lessees on the land, but one mine was operated during 1904, and this was sold to the Little Giant Mining Co. on December 24, 1904. The equipment is quite limited and the ore bodies worked thus far not below the 40-foot level.

F. T. FISH MINING CO.—MIDWAY TRACT.

Frederic T. Fish, Jno. D. Fish and Wm. Goos are lessees from the American Zinc, Lead and Smelting Co. of 12 lots. Their postoffice address is Box 270, Joplin, Mo. There are a number of sub-lessees, but the O'Be Jolly Mining Co. was the only producer of ore during the year. It operated one mine, the shaft being 70 feet in depth. The silicate ore is worked at from 33 to 45-foot level; jack and lead at 45 to 55 foot-level; lead, however, is found at both levels. There are two ore faces exposed in the drift averaging six by seven feet. The equipment answers present needs, as the work has not passed the prospecting stage. The production was $5\frac{1}{2}$ tons zinc ore, $170\frac{1}{4}$ tons of silicate, 17 tons of lead and $2\frac{1}{2}$ tons of dry-bone. F. T. Fish of Joplin (not Fish of Davenport, Iowa) and Wm. Goos of Davenport are special partners.

in the sub-lease, as well as the original lessees from the American Zinc, Lead and Smelting Co. The first lessees are prospecting with a churn drill under the charge of F. T. Fish, manager.

JUNIATTA LEAD AND ZINC CO.

(A. Z., L. AND S. CO.)

This company has a lease on 20 acres on the Midway tract, at a royalty of 10 per cent. It is incorporated in this State for \$80,000. Geo. Lile is president of the company and Geo. Merk, secretary and treasurer, with postoffice address 107 East Fourth street, Joplin, Mo.

The Terra Cotta Mining Co. controls 36 lots, sub-leased from the Juniatta, at a royalty of 25 per cent. This company operated one mine during the year, and three ore faces of varying dimensions have been exposed. The shaft has a depth of 125 feet and the ore body worked at the 120-foot level. The equipment embraces one 80-ton mill (daily capacity), six steam jigs, two boilers, two engines, two pumps, steam drill, two steam hoisters and one crusher. The product resulting from an off and on style of working, was 288,100 pounds of zinc, 2,800 pounds of silicate and 320 pounds of lead.

SASSAFRAS MINING CO.

(A. Z., L. AND S. CO.)

This company is incorporated under the laws of Missouri for \$60,000. It owns the first lease on 12 lots on the Midway tract. Geo. L. Jarrett is president of the company, and J. E. Bell, secretary, with post-office at Carthage, Mo.

J. S. COOPER & CO.—SUB-LESSEE.

Cooper & Co. have a sub-lease from the Sassafras on 12 lots. There one mine on the sub-lease which was worked only a short time during the year, the mine having been shut down until a short time before the close of the year. The shaft has a depth of 112 feet. Ores are mined at the 70 and 110-foot levels and two faces of ore are exposed of from four to five feet. Cooper & Co. worked not to exceed four weeks during part of the year, producing 30,000 pounds of zinc and 20,000 pounds of lead.

CEMBER TRACT OF THE A. Z., L. AND S. CO.

and embraces the 40 acres of land in the northeast of 34, township 28, range 32.

LUKE & CO.—FIRST LESSEES.

Luke, Ash & Co. hold the first lease on 40 acres of the December tract, and in turn sub-leased to the Square Mining Co., a co-partnership composed of A. Butler, E. H. Brosingham and W. H. Flanigan, with postoffice address at Carthage. The Square Mining Co. controls 20 acres, sub-leased from Luke & Co., and did the only mining done on the tract during the year, with an output of 265 tons of zinc and $17\frac{2}{3}$ tons of lead ore, valued at \$12,625.

The equipment embraces one 100-ton mill, thoroughly equipped with boilers, engines, steam and lift pumps, air compressors, air drills, steam hoisters and crushers. There was but one producing mine, having shaft 170 feet in depth, operated. The ore, which has a face of 9 feet, is worked at the 162-foot level. Mr. Chas. Ozias is the general manager for the company.

HOCADAY TRACT OF THE AMERICAN ZINC, LEAD AND SMELTING CO.

This tract of land, consisting of 72 acres, located in the northwest of northwest of section 6, township 28, range 32, is owned and operated by the American Zinc, Lead and Smelting Company. The mining facilities consist of a completely equipped concentrating plant, the mill having a daily capacity of 100 tons. There was only one mine operated during the year, from which was taken 553 tons of zinc and $245\frac{1}{2}$ tons of lead ore, valued at \$28,437.68. The ore is mined from the 170-foot level.

PORTER TRACT—AMERICAN ZINC, LEAD AND SMELTING CO.

This tract contains 200 acres of land, owned in fee by the American Zinc, Lead and Smelting Co., and located three miles west of Joplin. The lessees on this tract are P. C. Campbell & Co. of Joplin and the Lamar Tailing Mill Co. of Carthage. P. C. Campbell & Co. operates a custom mill, handling the ore produced by the sub-lessees. The mill commenced work in November, 1904. The Lamar Tailing mill operated during the early part of the year. The value of the total output from this land amounted to \$6,969.75.

RICHLAND TRACT.

This tract embraces 30 acres of land, the fee of which is owned by the American Zinc, Lead and Smelting Company, and B. F. Hatcher one-half. The sub-lessees on this tract are as follows:

Toetz & Glenn, 15 acres.

Belmont, 9 acres.

Daniels, 6 acres.

The Belmont has since sold to the Majestic Consolidated Mining Company. The production from this tract for the year was 961 tons of zinc and 503½ tons of lead ore, valued at \$64,902.01. There were four mines operated in 1904, the shafts averaging 190 feet in depth, with ore faces 10 by 40 feet. There were three concentrating plants in use, the mills averaging a daily capacity each of 100 tons.

MATTIE L. MINING CO.

The Mattie L. Mining Co. on October 15, 1904, succeeded to the lease held by the Lula D. Mining Co. From April 23 to September 24 work was confined to the sinking of a 160-foot shaft. The ore was mined from the 140-foot level, and from September 24 to the close of the year development work was engaged in, with a product of 303 tons of zinc ore and 18 tons of lead ore, valued at \$12,972. The equipment was composed of one boiler, engine, steam drills, air compressor, steam hoister and a crusher.

The American Zinc, Lead and Smelting Company produced from its own land during the year 4,713 tons of zinc ore; from leased lands, 3,286 tons, making a total for zinc of 7,999 tons; of the silicate from its own lands, 483 tons; leased lands, 15 tons, or a total of 498 tons. Lead from its own lands, 939 tons; leased lands, 505 tons, or a total of lead ore amounting to 1,444 tons. Dry-bone, 7 tons from its own land. The value of the product from its own land was \$230,686, and from leased property, \$136,483, or in all, \$367,169. The description of its leased land will come under the head of the Daugherty, Davey & Daugherty land.

AMSDEN LAND.

This tract of mineral land, owned by Mrs. L. C. Amsden and husband, contains fifty-nine acres and is located in southeast quarter section 30, township 29, range 31, and is leased to the

WADDELL ZINC COMPANY.

The Waddell Zinc Company is incorporated under the laws of Missouri with an authorized capital stock of \$30,000. Alexander Dick is president, and James Waddell of Carthage, Mo., is secretary and treasurer.

There are five shafts, averaging 53 feet in depth, and both lead and zinc ores are being produced. During last year there were 711½ tons of lead ore mined and 543½ tons of zinc ore, the aggregate value \$23,514.00. The company employs twelve miners and pays wages at an average of \$2.25 per day for miners and

\$2.00 for other help. It operates one concentrating plant, with a capacity of 150 tons per day, using two steam boilers, three engines, three steam hoisters, two horse hoisters, one crusher, twenty-two steam and two hand jigs and such other machinery as is necessary to a complete mill.

ARCANMO LAND.

This tract of mineral land, consisting of 80 acres, belongs to the Arcanmo Real Estate and Investment Co., with office in Frisco building, St. Louis, Mo. The first lease is held by the

AIDA B. MINING CO.

The office of the company is at Joplin, Mo. H. Gundling is president and C. Baldwin, secretary. This company is incorporated under the laws of the State of Maine, with an authorized capital of \$200,000. The work on this property is confined to one shaft 175 feet in depth, with two ore bodies at levels of 135 and 155 feet, respectively. The mine has five drifts, with ore faces of 20 by 20 feet each, and the concentrating plant consists of two steam boilers, two engines, two lift pumps, three steam hoisters, one crusher and other necessary machinery for a complete mill. Sixteen miners and ten other workmen are employed, at an average wage of \$2.25 per day per man. The product of the mine in 1904 was 282 tons of zinc and 15¼ tons of lead, which was marketed for \$11,504.93.

ARMIL (JACKSON) LAND.

We are satisfied that the report on this land is not full, as Mr. Armil informs us that the books in which his record was kept was destroyed. This property consists of 43 acres of land, located about two miles southwest of Joplin.

ASHCRAFT LAND.

This tract of land consists of 43 acres, and is in section 7, northwest of northwest of township 28, range 32. The postoffice address of Mr. Ashcraft and also the address of his general manager, Mr. Frank Nicholson, is at Joplin, Mo. The first mining lease on this land is held by the

PROVIDENCE MINING AND MILLING CO.

The company is incorporated under the laws of the State of Maine with an authorized capital of \$150,000, and has sub-leased six one-acre lots of the above tract to

BURCH & CO.

The sub-lessees are working two shafts on this property, which are 161 and 185 feet in depth, respectively. Their concentrating plant is of 150 tons capacity and its machinery consists of four steam boilers, one engine, one steam pump, one crusher, two horse hoisters, four air drills and other necessary machinery. They are working two ore faces 8 feet by 15 feet, and employ 21 miners and 14 other help. Their employes receive on an average of \$15 per week. The company pays a royalty of 20 per cent, and the product of the mines last year was 270 tons of zinc and 314 tons of lead, sold for \$23,498.

AYLOR (A. W.) LAND.

The Aylor land consists of 180 acres and is situated in section 9, township 29, range 32. The first lessee is the

ECLIPSE LAND AND MINING CO.

The postoffice address of this company is at Carterville, Mo. It was incorporated under the state laws of Missouri with an authorized capital of \$200,000, and A. W. Aylor is its president and business manager. There are eight mines on the property producing ore, and six concentrating plants in operation, with a daily capacity of one hundred tons each. These plants are run with 14 steam boilers, seven engines, six steam pumps, one air compressor, two air drills, thirteen steam hoisters, six crushers and two tables. The names of the sub-lessees are:

Cornucopia Mining Co., Webb City, Mo.—6 lots.

Spearman Mining Co., Alba, Mo.—9 lots.

Sure Thing Mining Co., Carthage, Mo.—4 lots.

E. F. Quackenbush, Alba, Mo.—10 lots.

Matt Zogg, Granby, Mo.—4 lots.

Litchliter & Co., Joplin, Mo.—4 lots.

Florinda Mining Co., Neck City, Mo.—4 lots.

Montclair Mining Co., Webb City, Mo.—5 lots.

The Eclipse Land and Mining Company, during the year of 1904 produced 4,153 tons of zinc and 108 tons of lead, for which was received \$159,753.12.

SURE THING MINING CO.

is incorporated under the laws of Missouri for \$8,000
 100 acres, sub-leased from the Eclipse Land and
 and has not begun active mining operations and

TAINWORTH LEAD AND ZINC CO.

The above company hold a first lease on 40 acres of land in section 10, southeast of northwest in township 27, range 32. It sub-leased three lots, embracing 4 4-9 acres, to P. F. Thompson, and three lots of 4 4-9 acres to J. H. Clark, both of Carthage, Mo. The company is not incorporated and is composed of Walter Robinson, W. H. Stevenson, E. A. Bourne, Geo. F. Taylor, W. C. McConce, Frank Nash and Sid Wilkins. This company has no concentrating plant upon its lease and its work thus far has been confined to prospecting.

QUACKENBUSH MINING CO.

The address of the Quackenbush Mining Co. is at Alba, Mo. This company holds sub-lease under the Eclipse Land and Mining Co. on nine acres in west part of southeast of section 9, township 29, range 32. The company has a concentrating plant of one hundred tons capacity per day, consisting of two steam boilers, two engines, eleven steam jigs, one crusher and other necessary machinery. One shaft is worked, which is 212 feet in depth, and from which four drifts with ore faces 10 by 15 feet are yielding both lead and zinc. The output of the mine for 1904 was 81,800 pounds of lead and 388 tons of zinc. Twelve men are employed to work this mine.

DIXON MINING CO.

The Dixon Mining Co., under the sub-lease of Ben R. Dixon, control four lots of the Aylor land. This land was obtained from the Eclipse Land and Mining Co., which has first lease on the property. There is one shaft on this land and mineral is found at three levels, 40, 90 and 190 feet, respectively. The product of the mine was milled last year at Lichliter-Varner mill, and the output was 380½ tons of zinc and about \$13,000 worth of dry-bone. The address of Ben. R. Dixon was at Alba, Mo., but he has left the country.

LICHLITER-VARNER MINING CO.

The postoffice address of this mining company is at Alba, Mo. It holds its sub-lease under the Eclipse Land and Mining Co., on four lots, consisting of four acres of land of the Aylor tract in section 9, township 29, range 32. The company is not incorporated and is composed of the following parties: N. B. Lichliter, L. L. Lichliter, O. E. Lichliter, M. Lichliter and John B. Varner. One mine at a depth of 190 is worked *this property and the mineral occurs at three levels, 60 feet, 90 feet*

and 190 feet. The size of the ore faces are 20 feet, 10 feet and 30 feet, respectively. The company operates one concentrating plant of a daily capacity of one hundred tons. The machinery embraces two boilers, one engine, three steam drills, one steam hoister, one crusher and other necessary apparatus which accompanies a complete plant. An average of 15 miners is employed, and the average wages paid to miners is \$2.35 per day. Last year the zinc produced from the mine amounted to 1,316½ tons and was marketed for \$49,094.42. This mine was opened March, 1904, and the report embraces the output of mineral to December of the same year. The company pays 20 per cent royalty for its sub-lease privileges.

AYLOR (J. W.) LAND.

This fruitful tract of mineral land is owned by J. W. Aylor of Webb City, Mo. It consists of 40 acres, located in southeast of southwest of section 21, township 28, range 32. There are eight concentrating plants in operation on this property, with a daily capacity each of one hundred tons. The total product of this land in 1904 was 15,632 tons of zinc and 470½ tons of lead, the aggregate value of which was \$576,571.90. The land is leased to the following mining companies, which pay the owner a royalty of 20 per cent on zinc and 33½ per cent on lead. The Nymo Land and Mining Company, Avondale Mining Co., Dominion Mining Co., Holy Smoke Mining Co. and Lucky Budge Mining Co.

AVONDALE MINING COMPANY, NOS. 1 AND 2.

The Avondale Mining Co. is not incorporated, and is composed of R. B. Dodge, W. E. and S. C. Patton of Webb City; Thos. Dougias of Joplin, and G. Womack. They are operating about eight acres of the Aylor land in section 21, township 28, range 32. They have two complete concentrating plants in operation, equipped with two steam boilers, two engines, two steam hoisters, four steam jigs and other machinery and appliances required for the proper treatment of the ore. Two shafts are being operated at about the 135-foot level, and during last year there were mined and sold 3,506 tons of zinc and 141¾ tons of lead, for which the company received \$149,456.

DOMINION MINING CO.

■ Dominion Mining Company of Webb City, Mo., hold first lease on the J. W. Aylor land in the southeast of southwest of section 21, township 28, range 32. The company is not incorporated and is composed of R. B. Dodge, W. E. Patten and Reno Womack. They

are operating one concentrating plant, with one steam boiler and engine, one steam drill, one steam hoister and one crusher. They employ 18 miners and pay them on an average of \$2.25 per day. They are working four ore faces 25 by 30 feet, at a depth of 135 feet, and produced last year 2,488 tons of zinc and 173 tons of lead, which they sold at an average price of \$27 per thousand pounds for lead and \$38 per ton for zinc. The aggregate amount of their sales was \$97,046. W. E. Patten is superintendent of the mine.

HOLY SMOKE MINING COMPANY.

The Holy Smoke Mining Co. hold first lease on 259 feet by 400 feet of the J. W. Aylor land in the southeast of southwest of section 21, township 28, range 32. The company is incorporated under the state laws of Missouri with an authorized capital of \$65,000, and is officered as follows: Jas. Luke, president; B. A. Ash, secretary and treasurer, with office at Carthage, Mo. The company is operating with three concentrating plants, embracing four boilers, three steam engines, two steam hoisters, three crushers and other machinery necessary for proper treatment of the ore. The superintendent employs on an average thirty miners and sixteen other employes, and pays an average wage of \$2.50 per day. During the year the company produced 6,750 tons of zinc and 49,310 pounds of lead, and the total value of the output was \$204,942.

LUCKY BUDGE MINING CO.

The Lucky Budge Mining Company is a corporation organized under the laws of Missouri with an authorized capital stock of \$40,000, and the officers are B. W. Lyon, W. M. Peet, W. M. Scott, and John Dusby, manager. The company owns a mining lease on ten acres of land owned in fee by J. W. Aylor of Carthage, Mo., and situated in the southeast of southwest of section 21, township 28, range 32. A royalty of 20 per cent is paid on all ores mined to the owner of the property. The shafts are 140 and 168 feet in depth, respectively. The company employs on an average thirty-six miners and fifteen other employes. Eight ore faces 10 by 30 feet are being worked, and the average wages paid for all help is \$2.25 per day. Two concentrating plants are used on this property of one hundred tons each, and consisting of three steam boilers, two steam engines, one steam pump, two steam hoisters, two crushers and such other machinery as is necessary in properly treating ore. The total amount received for zinc from this property for the year was \$86,108.

NYMO LAND AND MINING CO.

The Nymo Land and Mining Company of Webb City, Mo., is incorporated under the state laws of New Jersey, with an authorized capital stock of \$60,000. The officers of the company are Wm. B. Douglas, president; H. L. Johnstone, secretary and treasurer. The company holds first lease on 40 acres of land owned in fee by J. W. Aylor of Carthage, Mo., and located in section 18, township 23, range 32. The company operates one mine on the property, the shaft being 150 feet in depth. It has one concentrating plant, with daily capacity of one hundred and fifty tons, and the jigs, pumps and hoister is driven by electricity. Thirteen men are employed on the property, five of whom are miners. This company is doing considerable prospecting and development. During the year it sold 117½ tons of zinc and 16¾ tons of iron for \$4,717.

AVONDALE LAND AND MINING CO.

The Avondale Land and Mining Company, with postoffice at Carthage, Mo., is incorporated under the laws of the State of Michigan, and capitalized for \$25,000. The company owns the fee of 160 acres of mining land, located in the southeast quarter of section 7, township 28, range 33. First lease on this land is held by the Oxford Mining Co., which company has its postoffice address at Carl Junction, Mo.

OXFORD MINING CO.

The Oxford Mining Co. controls 160 acres of land, under lease from the Avondale Land and Mining Co., as owner. The land is located three-fourths of a mile southwest of Carl Junction, and during the year 1904 was sub-leased by the Oxford Mining Co. to the following:

Ishpeming Mining Co.—1 shaft, 16 acres.

Desplaines Mining Co.—2 shafts, 4 acres.

Pecan Mine—1 shaft, 4 acres.

Champion Mine—1 shaft, 1½ acres.

Kate Thorne—1 shaft, 8 acres.

Jubilee Mining Co.—2 shafts, 16 acres.

Eight shafts, having depths of 130, 90, 127, 100, 102, 103, 117 and 37 feet, were operated at intervals during the year, the product from the above mines amounting to 2,704,410 pounds of zinc ore and 67,840 pounds of lead ore, which sold for \$49,596.58. On the lease there are concentrating plants (two of which have a daily capacity of 100 tons of rock and one of 50 tons), seven hand jigs and the following

machinery: Six boilers, six engines, five steam pumps, one air compressor, five steam hoisters, one gasoline hoist, two large sets of lift pumps and three crushers.

One deep pump shaft was sunk by the Ishpeming Mining Co., and all the necessary machinery installed.

The company is incorporated under the laws of the State of Michigan. C. H. Hall of Evanston, Ill., president; E. R. Hall of Chicago, Ill., vice-president; Joseph Storey, superintendent, with postoffice address Carl Junction, Mo.

Itemized report of ore sales for 1904, arranged according to lessees:

Acres.....	Pounds zinc ore.	Pounds lead ore.	Value.	Average price per ton of zinc ore.	Average price per ton of lead ore.	Name of operator.
16	812,570	.....	Zinc, \$5,190 60	\$30 00	.....	Ishpeming Mining Co.
4	1,422,250	55,070	Lead, 25,094 89	35 20	\$56 57	Desplaines Mining Co.
4	825,890	.....	.....	32 50	.....	Pecan Co.
13½	471,080	.....	.....	34 64	.....	Champion Mine.
16	117,900	.....	.....	33 75	.....	Jubilee Mining Co.
1	.....	12,770	.....	.....	.....	Kate Thorne
Chatta.....	44,040	.....	.....	34 48	.....	Smith & Flock.
Totals.....	2,704,410	67,840	49,506 58			

BAILEY & ROBINSON LAND.

This tract of land, owned by Bailey & Robinson, address at Carthage, Mo., consists of 80 acres, being in the southwest quarter of section 20, township 28, range 33. First mineral lease on the land was given to John C. Bailey and C. B. Stickney.

BAILEY & STICKNEY.

Messrs. John C. Bailey and C. B. Stickney hold first lease on 80 acres of land owned in fee by John C. Bailey and W. M. Robinson of Carthage, Mo. The land is located in southwest quarter of section 20, township 28, range 33. Three lots of 5½ acres is sub-leased to Ben. Ensing of Webb City, Mo., and three lots to Wm. Fahrman of the same place. There is but one mine on the land and it is 160 feet deep. The sub-lessees worked about two and one-half months during year, producing 57 tons of zinc. Their machinery consisted of one boiler, one engine, two lift pumps and one steam hoister. They quit work in September, 1904, and have done nothing in the way of mining since.

BAKER LAND.

Mr. L. H. Baker of St. Louis, Mo., is the owner of 40 acres of mineral land, located in the southeast of southwest of section 33, township 28, range 32. He leased this tract to L. J. Stevison and Charles Moore of Webb City, Mo.

STEVISON & MOORE.

Messrs. L. J. Stevison and Charles Moore of Webb City, Mo., hold first lease on 40 acres of land in southeast of southeast of section 33, township 28, range 32, owned by L. H. Baker of St. Louis, Mo. There are six mines on the land, varying in depth from 60 feet to 150 feet. The ore bodies are at levels of 30 feet and 110 feet, and twelve ore faces 8 by 20 feet are worked. These gentlemen employed twelve miners and eight other help for about three months in 1904, and produced 510 tons of zinc, 391 tons of lead and 70 tons of silicate, for which they received \$36,670. Their concentrating plant is of a daily capacity of 100 tons, consisting of two steam boilers, one engine, one steam pump, three steam hoisters, two horse hoisters and one crusher. This co-partnership was succeeded by the Reliance Mining Co., a corporation, which continued to operate the mines.

RELIANCE MINING COMPANY.

The Reliance Mining Co. of Webb City, Mo., is incorporated under the laws of Missouri, with an authorized capital stock of \$300,000. The officers are, F. E. Rogers, president; Chas. Moore, secretary; L. J. Stevison, general manager. The company controls under first lease from L. H. Baker of St. Louis, Mo., owner in fee, 40 acres of land in southeast of southeast of section 33, township 28, range 32. The company sub-leased five lots of one acre each to the following parties: Hippo Mining Co. of Webb City, Mo., with John Weaver, manager, two lots; D. L. Horton of Sarcoxie, Mo., one lot; S. Blankenship of Webb City, Mo., two lots. The sub-lessees pay a royalty of 25 and 30 per cent of all mineral mined. The company has one concentrating plant of a daily capacity of one hundred tons. The machinery consists of two steam boilers, one engine, one steam pump, three steam hoisters, three horse hoisters, one crusher, and all other necessary machinery and apparatus for the proper treatment of ore. There are four mines on the property, and twelve miners *and eight other employees* were required to operate the mines. During *the seventy days' work* in 1904 the miners received wages each at an *average of \$2.25 per day* and the other employees at an average of \$2.50

per day. The product of the mines for the 70 days' work in 1904 was as follows:

Zinc, 316 tons @ \$36.62.....	\$11,572 40
Silicate, 103 tons @ \$16.....	1,649 70
Lead, 310¼ tons @ \$55.20.....	17,525 80
Dry-bone, 5½ tons @ \$32.65.....	179 60
Total.....	\$30,987 50

BARTELS & RYUS LAND.

This land, owned by Bartels & Ryus of Carthage, Mo., is situated in section 29, township 28, range 31, and consists of 40 acres. The property was leased to the Kiheka Mining Co. and is now under its control.

KIHEKA MINING COMPANY.

The Kiheka Mining Company controls 40 acres in section 29, township 28, range 31, under first lease, from Bartels & Ryus of Carthage, Mo., who own the property in fee. The company is not incorporated, and has sub-leased portions of the land to the following companies: Loan Elen Mining Company, Hull & Co., and Dazey Belle Mining Co., all of Carthage, Mo. The company is operating three mines, the shafts of which are 70 feet in depth, and six ore faces, 40 feet in size, are being worked. There is no concentrating plant on the property, and the machinery in use consists of two steam boilers, one engine, two steam pumps, six hand jigs, two steam hoisters, one horse hoister, one crusher, and other needful apparatus. The company employ ten miners, each at an average of \$2.25 per day, and ten other employees at \$2.00 per man. The product of the mines last year was as follows: 950 tons of zinc at \$34.00; 320 tons of silicate at \$16.00 and 20 tons of lead at \$54.00, aggregating the total value of \$38,650. The company report the sinking of three new prospect shafts, exposing 22-foot face of ore, and one new silicate shaft, with 52 feet faced with 75 per cent silicate.

BELLEVILLE LAND AND MINING CO.

The Belleville Land and Mining Company of Joplin, Mo., is incorporated under the laws of Missouri with an authorized capital stock of \$60,200. This company owns 160 acres of land, situated in southwest quarter of section 25, township 28, range 34. The officers of the company are John A. Sea, Natt Clark and M. H. Roberts. They have leased ten acres of this land to Geo. E. Ladd and ten acres to W. Mc-

Cormick, both of Rolla, Mo., on a royalty of ten per cent. There is but one mine opened up on the property with an ore face 6 by 8 feet. The shaft is 40 feet deep and the ore body is at the bottom of same. The company has no concentrating plant, and its machinery consists of two steam boilers, one steam engine, two steam pumps, two steam hoisters and two hand jigs. Three miners are employed at an average wage of \$2.00 per day each. The output of this company last year was 39½ tons of zinc and 1½ tons of lead, which brought the total sum of \$1,577. The work thus far has been confined to prospecting the land.

BLOOMINGTON MINING CO.

The Bloomington Mining Co. of Carthage, Mo., own ten lots, consisting of 8½ acres in section 1, township 27, range 33, which is leased to the Dayton Mining Co.

THE DAYTON MINING CO.

The Dayton Mining Company of Joplin, Mo., is not incorporated. It holds first lease on ten lots, 8½ acres of mineral land in section 1, township 27, range 33. The company is composed of J. Kirby, Jr., of Dayton, Ohio; E. H. Allen of Piqua, Ohio; B. S. Peete of Carthage, Mo., and R. C. Peete of Joplin, Mo. The latter party is superintendent of the mining company. The company is operating with one concentrating plant, also leased from the Bloomington Mining Co. The machinery consists of two steam jigs, two boilers, one steam engine, two lift pumps, one steam drill, one steam hoister and one crusher. There is one mine on the property producing ore, the shaft of which is 114 feet in depth. There are five ore faces, 7 by 10 feet in size, and at a level of 109 feet now being worked. The company employ five miners at \$2.25 each per day, and three other men at from \$2.25 to \$3 per day. The product from 113 days' work last year was 21 tons of zinc and ¾ ton of lead, which brought \$956.

BOSTON-DUENWEG MINING CO.

The Boston-Duenweg Mining Co. of 45 West Minster street, Providence, R. I., is incorporated under the laws of West Virginia, with an authorized capital stock of \$1,000,000, and officered as follows: Frederick A. Chase, president; John Kilburn, vice-president; Geo. J. Kusteret, *secretary and treasurer*, and A. S. Wilson of Duenweg, Mo., manager. *The company owns in fee 150 acres of mining land, 70 acres in section 3 and 80 acres in section 10, township 27, range 32. The Boston-Duen-*

g Mining Co. is not engaged in any actual mining, and most of its ore was extracted from tailing piles and miscellaneous dumps on ground, and its lead from shallow gouges in broken ground formerly rked. About two months' time was spent in cleaning up this mineral. e company leased portions of its land to the following companies: mes V. Mining Co. of Independence, Mo., 6 lots, $7\frac{1}{2}$ acres, at a royalty 15 per cent. This tract is now in course of development; Kepner & o. of Duenweg, Mo., one-acre lot, at a royalty of 25 per cent; Hamp- n & Co. of Duenweg, Mo., one-acre lot, at a royalty of 25 per cent, id Hamons & Co. of the same place, one-acre lot at 25 per cent royalty. here is no concentrating plant on the property, and the machinery used nsists of three hand jigs and three one-horse hoisters. The product om this property last year was $62\frac{1}{2}$ tons of zinc, 53 tons of silicate, oo $\frac{1}{2}$ tons of lead and $10\frac{1}{2}$ tons of dry-bone, all of which marketed or \$8,319.

BOLLMANN AND DANIEL LAND.

WOLVERINE ZINC CO.

The Wolverine Zinc Co., formerly known as the Waverly Mining o., is composed of Erent Bollmann and John Daniel of Lamium, Michi- an. The company is incorporated under the laws of Michigan, with an uthorized capital stock of \$10,000, and John Langsford is its superin- ndent. This company owns 80 acres of mining land, located in sections 9 and 31 of township 21, range 21. There is one mine on the property, e shaft of which is 125 feet in depth. The company operates with one ncentrating plant, consisting of two steam boilers, one steam pump, e air compressor, two steam hoisters, one crusher and twelve steam gs. Fourteen miners are employed at an average of \$50 per month ch, and four other employes receive from \$1.80 to \$2.50 per man. The mprovements last year consisted of one shaft put down, cross-cut of 30 feet made and an air compressor put in. The product in 1904 was 50 tons of zinc, sold at \$40 per ton and amounting to \$14,400.

BOYD (J. P.) LAND.

SARCOXIE MINING CO.

The Sarcoxie Mining Co. is incorporated under the laws of Missouri ith an authorized capital stock of \$50,000. The officers of the com- any are: J. P. Boyd, *president and manager*; H. S. Boyd, *secretary*. he company is developing and mining upon 40 acres of land in the

northeast quarter of section 12, township 27, range 30, belonging to the president of the company. It has one concentrating plant of 100 tons daily capacity. The machinery consists of two steam boilers, one engine, three steam jigs, one air compressor, two air drills, one crusher and other apparatus for the proper treatment of ore. The company is operating one mine, the shaft of which is 228 feet in depth. It employs seventeen men at wages averaging about \$2.25 per day each. The company began work about the 12th of October, 1904, and at the end of the year sold 60 tons of zinc for \$2,880.

BRINKERHOFF AND HERRIN LAND.

IHLENG MINING CO.

The Ihlseng Mining Co. is not incorporated, and holds first lease on 20 acres of land in section 2, township 27, range 34, owned in fee by W. E. Brinkerhoff and J. Herrin of Carthage, Mo. The following companies are reported as sub-lessees on the tract: Ihlseng & Puckett, Craig & Co., Frank Nicholson, trustee; C. H. Rankin & Co. and Peel & White. There are seven shafts reported sunk on the lease, ranging in depth from 80 to 122 feet, and five of which produced during the year 526 tons of zinc ore, valued at \$17,519.50; 66½ tons of lead ore, valued at \$3,764, and 96 tons of sluge, valued at \$38.40. The improvements on the lease consist of two concentrating plants and two hand-jig plants, equipped with seven steam boilers, three steam engines, two steam and two lift pumps, six steam hoisters, three horse hoisters, two crushers, two sets of steam jigs and other machinery necessary for the proper treatment of ore.

BROOKS' ESTATE.

TRANSFER MINING CO.

The Transfer Mining Co. is not incorporated, and is composed of G. W. Burgess and W. E. Morgan of Joplin, Mo. They hold first lease on 18 acres of mining land in the hands of W. K. Caffee, administrator of the estate of Dr. Brooks. There are two sub-lessees on the land, the ~~the~~ ^{the} Co. and the Hell and Blazes Mining Co. There is plant upon the property in operation with a daily ^{output}. The machinery consists of two steam jigs, five ^{boilers} ~~boilers~~, one steam engine, three steam pumps, two ^{and} ~~and~~ other necessary apparatus for the proper ^{work} ~~work~~ es on this property were worked last year, the

afts of which are 125 feet in depth. Six men were employed in inspecting the land, and the product of mines were 164½ tons of zinc ore, valued at \$6,522.30.

LUCKY FIVE MINING CO.

This land, consisting of 20 acres and known as the Brooks' land, is held under first lease by Claybourne & Baugh of Galena, Kansas. It is sub-leased to the Lucky Five Mining Co., incorporated under the laws of Arizona, with an authorized capital stock of \$100,000. The officers of this company are: W. S. Bartlett, president; W. O. Wilkins, secretary and treasurer. The Lucky Five Mining Co. is operating upon this property with one concentrating plant with a daily capacity of one hundred tons. The machinery consists of two steam jigs, one steam boiler and engine, one steam pump, one steam hoister, one ore crusher and other needful apparatus, which is necessary to constitute a complete mill. Sixteen miners are employed and six other employes. The company pays its miners at an average of \$2.37½ per day each, and its other employes \$2.25 per day. The product of the mine during the year was 627 tons of zinc ore and ⅞ ton of lead, valued at \$20,126.

BUNCO MINING CO.

The Bunco Mining Co. made report, including all business done, and assigned its lease back to the land owners. Since the assignment there has been nothing done on the land. The company has quit business and disposed of its machinery.

BUCKEYE MINING CO.

The Buckeye Mining Co. has gone out of business. It was succeeded by the Milton Mining Company.

BULLER & MCGREGER LAND.

GAMMON LEASE.

C. B. Gammon of Carthage, Mo., holds first lease on 40 acres of mining land owned in fee by Messrs. Buller & McGreger of the same city. The lessee sub-leased part of the land to the following mining companies: Double Quick Mining Co., 10 acres; Opal-Wonder Mining Co.

10 acres; Jordan Mining Co., 7 acres. There are two shafts sunk on property to the depth of 195 feet, from which the greater part of the production during the year was made. There is one concentrating mill on the property with a daily capacity of 130 tons. It is equipped with all the required machinery and appliances for the successful treatment of the ore. The ore occurs mostly in hard ground that requires no timber for its support. There were produced during the year on the lease 567 tons of zinc ore, valued at \$20,028, and 35½ tons of lead, valued at \$2,002.

BURGNER MINING CO.

The Burgner Mining Co. is composed of J. M. Burgner, Mrs. C. Jones, Miss Lena Burgner, J. A. Bowman, J. W. Aylor and C. R. Child. The company owns a mining lease on 80 acres of land situated in the east ½ of northeast of section 20, township 28, range 32, the fee of which is owned by J. M. Burgner of Kansas City, Mo. This company does only a sub-leasing business, and the following companies are reported as operating on the lease: The Majestic Consolidated Zinc and Lead Co., John Durby Mining Co., Rochester Mining Co. and the Ohio Lead and Zinc Co., each having mills. Four shafts have been sunk, two to 195 feet, one to 173 and one to the depth of 210 feet, in which lead and zinc ores have been developed and from which there were produced and sold during the year 3,488½ tons of zinc ore, valued at \$137,240.50, and 1,108½ tons of lead, valued at \$61,338.71, making a total value of the two ores of \$198,579.21.

CALUMET ZINC AND LEAD CO.

The Calumet Zinc and Lead Company is incorporated under the State laws of Missouri, with an authorized capital stock of \$60,000. The officers of the company are: Dr. H. M. Brown, president; F. G. Bigelow, vice-president; G. L. Cole, secretary and treasurer, with address of company at Neck City, Mo. The company owns 32 acres of mining land and has leased portions of it to the following companies: Kathryn Mining Co., Dolly Mining Co. and Cole & Ingersoll Co. There are four concentrating plants on the property, with a daily capacity each of one hundred tons. The machinery embraces 8 team jigs, 7 steam boilers, 4 steam engines, steam drills, 6 steam hoisters, 4 crushers and other apparatus needed by the several plants to make them complete. The combined product from the mining lease last year was 2.

CARTER (DR. J. A.) LAND.

MOHASKA MINING CO.

The Mohaska Mining Co. is incorporated under the laws of New York, with an authorized capital stock of \$1,000,000. The officers of the company are: A. P. Groat, president; E. S. Greenleaf, vice-president; Harry P. Hanner, secretary, and M. B. Coburn, treasurer. The company controls 160 acres of land, owned by Dr. J. A. Carter of Carthage, Mo., sub-leased from The New York and St. Louis Mining and Manufacturing Co., the original lessee. The land is situated in east $\frac{1}{2}$ of southwest and west $\frac{1}{2}$ of southeast section 15, township 27, range 33. The company in control sub-leased five 4-acre mining lots to the following parties: John Harrington, E. Rawlins, J. Creech, H. Tilley and C. Holley Woods. There is no concentrating plant on the lease and the machinery used consists of two steam boilers, one steam pump, one steam hoister, one horse hoister and one hand jig. There are three shafts on the property 60 feet in depth, and the lead, zinc and silicate produced last year was valued at \$2,313. The Thirty-Eight Mining Co., which holds sub-lease on a tract of this land, sustained the loss of its mill, office books, etc., on October 2, 1904, and could consequently furnish no report of its mining operations.

CARRICK & GAGE LAND.

LOG CABIN MINING CO.

The Log Cabin Mining Co. is incorporated under the laws of Missouri, with an authorized capital stock of \$40,000. The officers of the company are W. G. Alexander, president, and A. M. Ort, treasurer. It controls 10 acres of mining land belonging to Carrick & Gage of Diamond, Mo. Geo. Donnellon is manager for the company and is operating one mine 60 feet in depth. The company has no concentrating plant on the property, and its machinery consists of three hand jigs, one steam boiler, two steam pumps. Ten miners are employed at an average wage of \$2.25. The product of the land for the year was 704 $\frac{1}{2}$ tons of lead, valued at \$39,443.

CASTLE ROCK MINING CO.

The Castle Rock Mining Company own 140 acres of land in sections 35 and 36, township 28, range 33. The company was once incorporated, but by action of the court the corporation was dissolved, and the land

is now private property, managed by a resident trustee. The trustee leased 29 acres of the land to the New Highland Mining Co. and 3 acres to E. B. Eder & Co. of Joplin, Mo. The New Highland Mining Co. early in the year lost its shaft and consumed most of the year in sinking a new one, and the little ore reported was from its new shaft, taken out during the last few weeks of 1904. The product was 60 tons of zinc and 5 tons of lead, valued at \$2,270. E. B. Eder & Co. began work on their lease about December 1, and put in the month in bailing water from their mine.

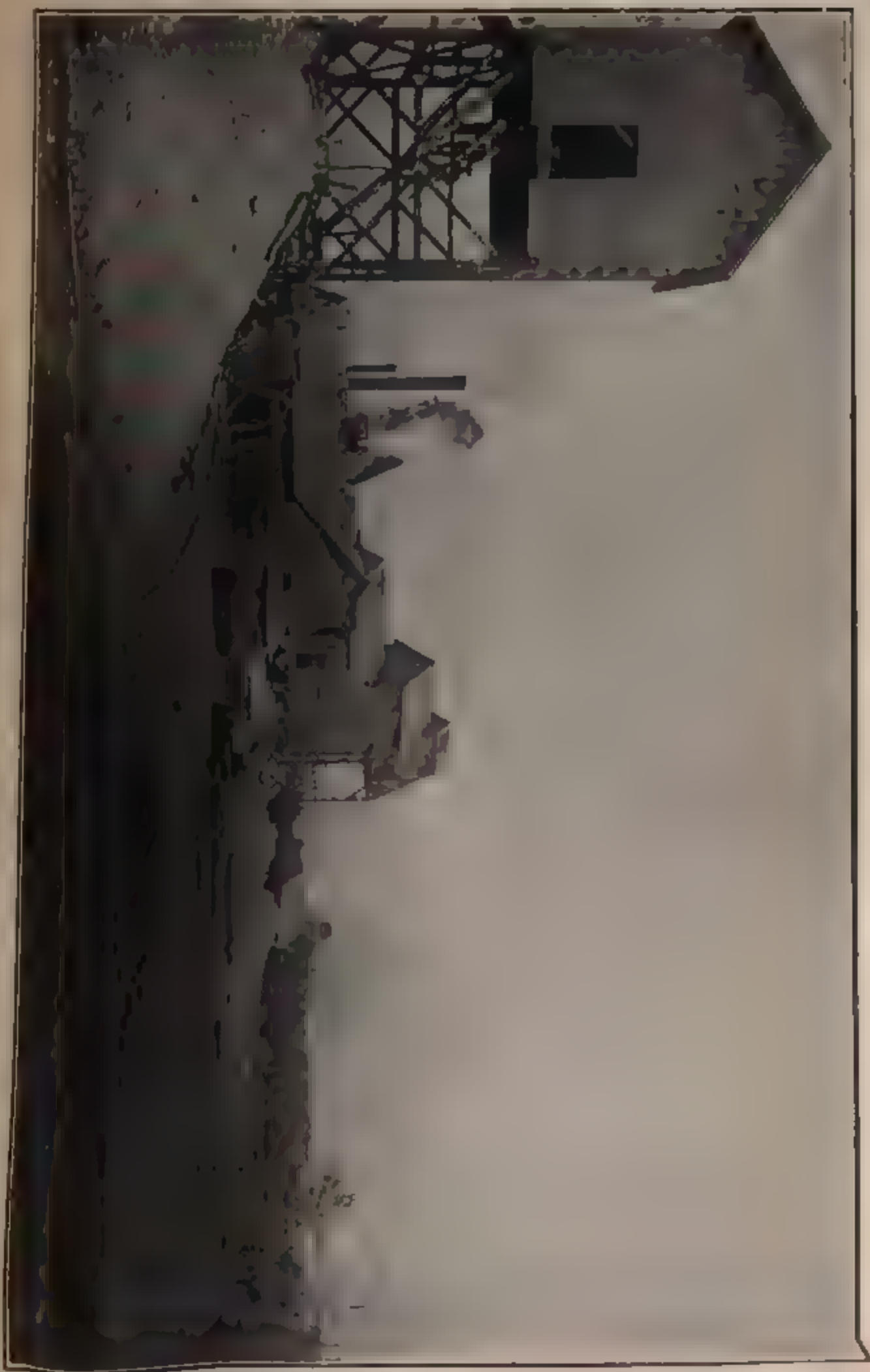
CAVE SPRINGS MINING CO.

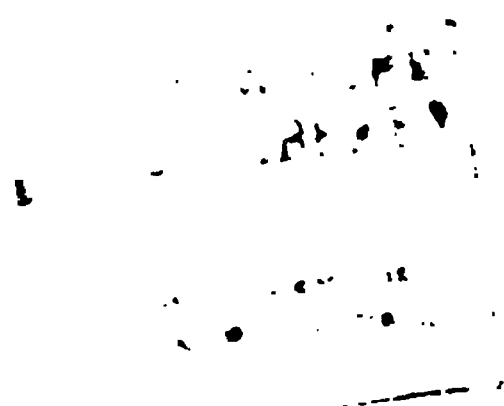
The Cave Springs Consolidated Mining Co., with postoffice address at Joplin, Mo., is incorporated under the laws of Kansas, with an authorized capital stock of \$10,000. It owns six acres of mining land in the northwest of southeast of section 2, township 27, range 34, and the officers of the company are W. C. McMillan, Marion Coulter and J. T. Leonard, with office at Joplin, Mo. The land is controlled under first lease by J. E. Raymond and W. C. McMillan of Girard, Kansas, who are operating one shaft 90 feet in depth. The concentrating plant on the property is of 100 tons daily capacity and equipped with two steam jigs, two steam boilers, one engine, two steam pumps, one steam hoister, one crusher and other needful apparatus necessary for the proper treatment of ore. The product of the mine last year was 300 tons of zinc ore and 10½ tons of lead, and was valued at \$11,560. Mining was discontinued in May, and the operations of the lessees consisted in working off the ground.

CENTER CREEK MINING COMPANY.

The Center Creek Mining Company of Webb City, Mo., is incorporated under the laws of this State, and capitalized for \$1,000,000. The officers of the company are J. C. Stewart, president and general manager; F. M. Hammett, vice-president, and W. C. Stewart, secretary and treasurer. The company owns 200 acres, 160 acres of which is situated within the eastern limits of Webb City, and 40 acres northwest of Caveville, joining the 160-acre tract. Lead and zinc ore was discovered on this land in 1875 and active mining has been continuous since that time. Deposits of ore beneath the soil of this land appear to be of great quantity and have been developed from about forty to about one hundred and seventy feet, which is the level at the present time. Something like two

MINING PLANT-WEIR CITY AND CARTEVILLE DISTRICT.





hundred shafts have been sunk on the company's land, and very few of them failed to develop ore in paying quantities. The company maintains a pumping station for drainage purposes and for water used in cleaning the ores, and we are informed, charges the operators on the land 25 per cent royalty on the zinc ore mined, while 50 per cent royalty is received from the lead ore. The lessees operating on the property are D. C. McConey, J. A. Hardy & Sons, Springs Co., B. Smith & Co., Reymond & Co., Beasley & Co., James Gale & Co., Good Shepherd Mining Co., Williams & Co., Miami Mining Co., Bell & Co. and Simmons & Co. The total product from this land during the year was 4,753 tons of zinc ore and 399 tons of lead, valued at \$180,256. The annual reports since 1881 to 1904 show that the mines on this property have produced zinc and lead ores valued at \$6,062,494.58.

D. T. SPRINGS & CO.

This company holds a lease on three acres under the Center Creek Mining Company, upon which it is now operating one shaft 115 feet in depth. The company worked with a force of eight miners for one hundred days last year in the production of mineral, and 250 days in the development of the property. It produced 237 tons of zinc and 7,540 pounds of lead ore.

B. SMITH & CO.

B. Smith & Co. control about two acres of mining land under lease from the Center Creek Mining Co. The product of their lease during the year was 185 tons of zinc ore and 43,320 pounds of lead ore.

LITTLE DIAMOND MINING CO.

This company, composed of J. A. Hardy, Geo. Hardy, J. A. Hardy, Jr., and the Federated Mine and Milling Co. of New Jersey, is operating upon a lease from the Center Creek Mining Co. The company is working one shaft 150 feet in depth with a force of 14 miners and seven other employes. During one hundred days devoted to the production of ore last year, the company reports the product to be 1,161 tons of zinc ore and 38,350 pounds of lead.

SIMMONS & CO.

This company, composed of P. Simmons and W. More of Webb City, Mo., hold lease on two lots belonging to the Center Creek Mining Co. The company does not report the production of any mineral.

The reports of the other lessees on the Center Creek Mining Co. land have not been received at the office of the Bureau of Mines, but the output of mineral from the land is embraced in the general report of the company.

CHASE (F. A.) LAND.

CONSOLIDATED JACK MINES.

The Consolidated Jack Mines Co., with postoffice address at Duenweg, Mo., hold first lease on 65 acres of mining land in northeast of southeast of section 4, township 27, range 32, owned by Frederic A. Chase of Providence, Rhode Island. The company controlling the lease is incorporated under the laws of the District of Columbia, with an authorized capital stock of \$850,000, and the officers are Frank Mattes, president; I. L. Weil, vice-president, and E. A. Mattes, treasurer. The company sub-leased 10 acres of the land to the Royal Mining Co. and 10 acres to the Laramie Mining Co. The output of this concern was 7,024 tons of zinc ore and 115 tons of lead ore, which sold for \$260,510.

The old Isabella Mining Co. sold its 357 acres of land to F. A. Chase of Rhode Island during the current year. The only ore produced during 1904 was 136 tons of zinc ore, which sold for \$3,959. This was from the Webster Mott Mining Co. by L. C. Henderson, the sub-lessee, whose lease is now cancelled. This makes the total production on this land for the year equal \$264,469.

CHASE AND MITCHELL LAND.

MERCANTILE METAL AND MILLING CO.

The Mercantile Metal and Milling Co. is incorporated under the laws of Arizona, with a capital stock of \$500,000. The officers of the company are, John Morton, president, and Frank Morton, secretary and treasurer. This company purchased the mining lease on 60 acres of land owned by Phil Chew and S. D. Mitchell of the Aida Mining Co. The property is located in section 33, township 33, range 32. The company is operating with two concentrating plants, each of a daily capacity of 120 tons. It employs an average of 25 miners and 16 other employees. The output of the lease was 2,350 tons of zinc ore, 15 tons of lead ore, which were sold for the sum of \$12

CHEW (PHIL) LAND.

LEO MINING CO.

The Leo Mining Company is not incorporated and is composed of W. C. Baer, G. W. Strain, Geo. H. Bruce, E. C. Hoffman, W. S. Gunning and J. W. Zoog. The lease held by the company is on 20 acres of mining land, owned by Phil Chew of St. Louis, Mo., and sub-leased to Bailey & Co. of Midway, Mo. This company has no concentrating plant on the lease and is working one mine, the shaft of which is 210 feet in depth. The product of the lease for 1904 was 29½ tons of zinc ore and 142¾ tons of lead ore, and sold for \$9,174.

GUSSIE K. MINING CO.

The Gussie K. Mining Co. is not incorporated and is composed of J. A. Hardy, Geo. Hardy, J. A. Hardy, Jr., and the Federated Mines and Milling Co. of New Jersey. The company holds a mining lease on 20 acres of land, owned by Phil Chew of St. Louis, Mo., and situated in northeast of southeast of section 33, township 28, range 32. One lot, consisting of one-half acre of land is sub-leased to B. M. Smith & Co., and four-acre lots to W. H. Smith & Co., both companies of Webb City, Mo. There is one concentrating plant of a daily capacity of 100 tons on the lease, equipped with two steam boilers, one steam engine, two steam jigs, two steam pumps, four steam hoisters, two crushers, and other machinery necessary for the proper treatment of ore. The product of the lease last year was 1,658 tons of zinc ore and 348 tons of lead ore, which was sold for the sum of \$80,674.

CHINN (MRS. E. J.) LAND.

ELEVENTH HOUR MINING COMPANY.

The Eleventh Hour Mining Company controls a mining lease on 120 acres of land, owned in fee by Mrs. E. J. Chinn of Webb City, Mo., the lease being owned by J. W. Aylor of Webb City, Mo., with management in the hands of Ben. C. Aylor. The following sub-lessees are reported operating on the tract: Chapman Mining Co., Chenoweth & Firth, Aylor & Leffingwell, Nutmeg Mining Co., C. C. Hume, Janes & Co., and F. L. Kerrick. There are fourteen shafts reported sunk to an average depth of 175 feet, in which zinc and lead ores have been developed, and

during the year 1904 there were mined and sold 4,245½ tons of zinc ore, valued at \$136,004.80, and 1,556½ tons of lead ore, valued at \$87,794.50, making a total value for the two ores of \$223,799.50. Five concentrating plants were operated last year. These mills are equipped with 13 steam boilers, six engines, one steam pump, eight steam hoisters, five horse hoisters, five crushers, six steam jigs and other machinery and appliances required for the proper treatment of the ore.

CINCINNATI-JOPLIN MINING CO.

The Cincinnati-Joplin Mining Co. is a corporation organized under the laws of Arizona and capitalized at \$250,000. The reported officers of the company are C. M. Wilson, president and general manager; W. N. Ewing, treasurer, and A. A. Small. The company owns in fee 347 acres of land. There are two companies which control under sub-leases small tracts of this mining property. They are the Stewart Mining Co., 16 acres; and the C. E. W. Mining Co., 8 acres. There is one concentrating plant on the property, with a daily capacity of 125 tons. It is equipped with two steam boilers, one engine, two steam pumps, three steam jigs, one air compressor, four air drills, two steam hoisters, one crusher and other machinery and apparatus required for the proper treatment of ore. The product from the mines on this land for the year was 700 tons of zinc ore, valued at \$25,000, and 14½ tons of lead ore, valued at \$763, making a total for both ores of \$25,763.

CITY OF JOPLIN LAND.

ADIRONDACK LEAD AND ZINC CO.

The Adirondack Lead and Zinc Co. is a corporation organized under the laws of Missouri and capitalized for \$150,000. The company holds a lease on 18½ acres of land owned by the city of Joplin, Mo. The officers of the company are H. H. Hinckley, E. A. Douglass, A. C. Allison and Geo. H. Russell. Two shafts on the lease, 170 and 195 feet in depth, respectively, are being operated. The company has one concentrating plant on the property, equipped with two steam boilers, one engine, two steam pumps, two steam hoisters, one crusher, five steam jigs and other machinery necessary for a complete mill. The product of the lease for the year 1904 was 2,130 tons of zinc ore, valued at \$63,097, and 1½ tons of lead ore, valued at \$8,833, making a total value of both ores of \$71,930. The company was completing the third shaft on the lease and expects to materially increase its output.

CLAYCOMB LAND.

COMMONWEALTH MINERAL CO.

The Commonwealth Mineral Co. was organized under the laws of the District of Columbia and capitalized for \$150,000. The officers of the company are Geo. B. Shattuck, president; Frederick H. Rogers, vice-president, and Wm. B. Clark, secretary and treasurer. The company controls, under sub-lease from Geo. B. Shattuck of Baltimore, Md., 20 acres of land in section 36, township 28, range 34. At the close of the year, when this report was made, the company was installing a new concentrating plant on the property. One shaft, 170 feet in depth, was worked for a few weeks in the latter part of the year and 95 tons of zinc ore was produced and sold for \$4,132.

COLLINS (DANIEL) ESTATE.

PERKINS ZINC CO.

The Perkins Zinc Co. is incorporated under the laws of the State of Maine and capitalized for \$50,000. The officers of the company are D. B. Perkins, president and manager; F. A. Ballou, vice-president; G. F. Fall, secretary and treasurer. The company controls, under sub-lease from Cal Stukey of Carthage, Mo., 40 acres of mining land, belonging to the Daniel Collins estate. Ten mining lots of this land, of one acre each, are sub-leased to the following companies: Hill Top Mining Co., six lots; Widner & Co., two lots, and Matherson & Sills, two lots. The property is located in section 25, township 28, range 34. There is no concentrating plant on the lease and the ore produced is taken from three shafts, varying in depth from 100 to 150 feet. 300 tons of zinc ore is reported as the product of the lease for the year, and was sold for \$10,500.

CROWN CREST ZINC AND LEAD CO.

The Crown Crest Zinc and Lead Mining Co., with office at Joplin, Mo., is organized under the laws of Maine, with an authorized capital stock of \$171,775, and officered as follows: C. A. Hopkins, president; Herbert Coolidge, vice-president; E. B. Drake, secretary and treasurer, and Frank Nicholson, general manager. The company owns the following described land in fee: The north 35 acres of the north

SECRET

The following information was obtained from the records of the Department of the Interior, Bureau of Land Management, regarding the land owned by the United States in the State of California:

The total area of land owned by the United States in California is approximately 60 million acres. This land is divided into several categories, including National Forests, National Monuments, and Public Lands.

National Forests cover approximately 38 million acres, or about 63% of the total land owned by the United States in California. These forests are managed by the U.S. Forest Service and provide a variety of resources, including timber, wildlife, and recreational opportunities.

National Monuments cover approximately 12 million acres, or about 20% of the total land owned by the United States in California. These monuments are established to protect areas of scientific, historical, or cultural significance.

Public Lands cover approximately 10 million acres, or about 17% of the total land owned by the United States in California. These lands are managed by various agencies, including the Bureau of Land Management, the Fish and Wildlife Service, and the National Park Service.

The majority of the land owned by the United States in California is located in the western part of the state, particularly in the Sierra Nevada mountains and the coastal regions. The eastern part of the state contains a smaller amount of federal land, primarily consisting of public lands and some national forests.

The land owned by the United States in California plays a significant role in the state's economy and environment. It provides a source of income through timber harvesting and recreation, and it also serves as a habitat for many rare and endangered species.

In conclusion, the United States owns a large amount of land in California, totaling approximately 60 million acres. This land is divided into three main categories: National Forests, National Monuments, and Public Lands. Each category has its own unique characteristics and management goals, and all contribute to the overall health and well-being of the state.

1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Lichtenthaler and Sponholz (1980). The total chlorophyll content was determined by the method of Arar and Cook (1980). The carotenoid content was determined by the method of Lichtenthaler and Sponholz (1980). The total carotenoid content was determined by the method of Lichtenthaler and Sponholz (1980). The total carotenoid content was determined by the method of Lichtenthaler and Sponholz (1980).

The company is operating the steam pump, three
meters, and other machinery and ap-
paratus, and is producing ore of 25% grade. The present operators
are operating the pump from August, 1901, and to the
present have produced from the land to be 255 tons of
ore, valued at \$240.50, and 41 tons of lead, valued at \$10.47.

COOK (THOS.) LAND.

ALBION MINING COMPANY.

The Mining Company is not incorporated and owns a lease situated about two miles southeast of Webb City,

the land being owned in fee by Thos. Connor of Joplin, Mo. The Will Go Mining Co. is reported as owning a sub-lease on the tract, and this company, with J. F. Lewis, superintendent, has been the only operators on the lease in 1904. There is one concentrating plant on the land, with daily capacity of 75 tons, and equipped with two steam boilers, one engine, one steam pump, two steam jigs, one steam hoister, one crusher, and other machinery which is required to constitute a complete mill. Ninety days were spent in the production of ore last year, and the product was 234 tons of zinc ore, which was sold for \$7,667.

FORRISTALL & O'DONALD MINING CO.

The Forristall & O'Donald Mining Company is a partnership, composed of Geo. L. Forristall and Chas. R. O'Donald of Boston, Mass. They own a mining lease on 40 acres of land, owned in fee by Thos. Connor of Joplin, and situated near Prosperity. Two companies, the Crescent Mining Co. and the Florence Mining Co., control six lots each of this land under sub-lease. There are two concentrating plants on the lease, each of a daily capacity of 100 tons. They are equipped with four steam boilers, two engines, four steam jigs, two steam pumps, two crushers and other machinery and apparatus necessary for the proper treatment of ore. No ore has been produced on this lease since July, as the mineral faces being worked by the Crescent and Florence F. Companies both gave out at that time. The product for 1904 was 765 tons of zinc ore, valued at \$27,163, and 1½ tons of lead, valued at \$94.50, making a total from the lease of \$27,257.50.

MCKINLEY MINING CO.

The McKinley Mining Company is incorporated under the laws of the State of New Jersey and capitalized at \$120,000, and its mining affairs are managed by R. H. Corbin of Joplin, Mo. The company owns a mining lease on 60 acres of land in the southwest quarter of section 28, township 28, range 32, owned in fee by Thos. Connor of Joplin, Mo. Six shafts are reported on the lease, sunk to the depth ranging from 90 feet to 210 feet, in which lead and zinc ores have been developed and during the year 1904 there were produced and sold 680½ tons of zinc ore, valued at \$22,082, and 327½ tons of lead ore, valued at \$18,104, making a total value of the two ores of \$40,186. There are four con-

centrating plants reported on the lease, equipped with four steam boilers, four engines, one steam pump, one air compressor, four air drills, five steam hoisters, two horse hoisters four crushers and such other machinery as is necessary to handle and properly treat the ore for the market. The companies sub-leasing on the land are as follows: Manda B. Mining Co., Kirrick & Co., Vermillion & Co., Brass Ring Mining Co., Columbia Lead and Zinc Co., and the Metallic Mining Co.

PLUTOCRAT MINING CO.

The Plutocrat Mining Co. of Webb City, Mo., is composed of J. C. Johnston, Wm. Hitchhead, A. F. Clay, J. A. Meeks, W. L. Meeks, J. A. Johnston, R. H. Branch and M. G. Branch, and is managed by H. L. Ross. The company does no mining, but owns a mining lease on 40 acres of land situated in northwest of northwest of section 28, township 28, range 32, owned in fee by Thos. Connor of Joplin, Mo. The Minnie R. Mining Co. holds a sub-lease on four mining lots and is working on some other parts of the land not covered by its lease. There was one shaft on the property producing ore last year, which yielded 209 tons of zinc ore, valued at \$6,470, and 36 $\frac{3}{4}$ tons of lead ore, valued at \$2,054, making a total value for both ores, \$8,524. There is one concentrating plant on the lease, with a daily capacity of 100 tons, and equipped with one steam boiler, one engine, one steam hoister, one steam pump, two steam jigs, one crusher and other machinery necessary for the proper treatment of ore.

TEN O'CLOCK MINING COMPANY.

The Ten O'Clock Mining Company is not incorporated and is composed of J. W. Aylor, Ben C. Aylor and Mrs. Nilson, all of Webb City, Mo. The company owns a mining lease on 10 acres of mineral land, the fee of which is owned by Thos. Connor of Joplin, Mo. There is one concentrating plant on the lease, with daily capacity of 100 tons, and equipped with one steam boiler, one engine, one steam pump, one air compressor, one steam hoister, one crusher and other apparatus and appliances for the proper treatment of ore. The company is operating one shaft 210 feet in depth, and during last year sank two new shafts to ore body, and connected same by air drift. About one-half of the year was spent in the production of ore, and the product was 249 $\frac{1}{2}$ tons of zinc ore, valued at \$5,649, and 783 tons of lead ore, valued at \$46,527, making a total value for both ores, \$52,176.

MYSTIC CONSOLIDATED.

The Mystic Consolidated is a mining company incorporated with a capital stock of \$1,250,000, and owning a mining lease on nine acres of land acquired from the Mount Ararat Company of Webb City, and owned in fee by Thos. Connor of Joplin, Mo. The company has one concentrating plant on the lease, with a daily capacity of 100 tons, and equipped with two steam boilers, one engine, one steam pump, two steam jigs, two steam hoisters, one crusher and other machinery and apparatus necessary for the proper treatment of ore. One shaft, 235 feet in depth, is operated, and from which was taken last year 372 tons of zinc ore and 276½ tons of lead ore, and for which was received for the combined product the sum of \$29,249.

MAJESTIC CONSOLIDATED ZINC AND LEAD CO.

The Majestic Consolidated Zinc and Lead Co. is incorporated for \$1,250,000 under the laws of Arizona. The officers of the company are W. S. Banteel, president; W. Wilkins, treasurer, and F. V. Laroyd, secretary.

The company has the following sub-leases in the district: Mount Ararat—ten acres lease, fee owner, Thomas Connor. Sub-lessees from Ararat, Gale Bros., Greenleaf & Co. and Tooley & Co.

Alexander—Eleven acres lease from Bowman & Burgner, they being the first lessees from J. M. Burgner.

Belmont—Eleven-acre lease on the B. F. Hatcher land; the American Lead, Zinc and Smelting Company holding the first lease, and Belmont sub-leased from them.

Majestic—Twenty acres, first lease on the Albert Kelley land, and a forty-acre first lease of the G. W. Ware land.

The leases are located as follows:

Mount Ararat, one and one-half miles southeast of Carterville; Alexander and Belmont, adjoining each other, one mile southeast of Carterville; Majestic, twenty and forty-acre tracts, one and three-quarter miles northwest of Webb City.

The product of these leases for the year was 4,333 tons of zinc ore, valued at \$135,650, and 1,765 tons of lead ore, valued at \$98,840, making a total value for both ores of \$234,490.

KATY C. MINING CO.

The *Katy C. Mining Co.* is incorporated under the laws of Missouri and capitalized for \$100,000. The officers of the company are

Thos. Connor, president; J. F. Wise, vice-president and treasurer, and T. C. Nolan, secretary, all of Joplin, Mo. The company is operating seven acres of land in the northeast quarter of section 29, township 28, range 32, owned by Thos. Connor. There is one shaft sunk in which both lead and zinc ores have been developed, the zinc predominating, to a depth of 220 feet. This mining property is splendidly located, and during the past year it has produced 562 tons of zinc ore, valued at \$19,670, and 30½ tons of lead ore, valued at \$1,662, making a total valuation for the two ores of \$21,332. The company has a complete 100 tons daily capacity concentrating plant on the property, equipped with one boiler, one engine, two steam jigs, one steam hoister, two steam pumps and such other machinery and appliances necessary to a complete plant of this capacity.

LIMA MINING CO.

The Lima Mining Company hold first lease on a 20-acre tract of mining land owned by Thos. Connor of Joplin, Mo. The company is not incorporated, and is composed of J. B. Kerr, O. B. Selfridge and D. C. Cable, with office at Lima, Ohio. The land is sub-leased to the Regulation Mining Company of Webb City, Mo., composed of R. M. Jones, Jerry Clark, Phil Gray and Chas. Goatley. There is a concentrating plant with a daily capacity of 100 tons on the lease, equipped with one steam boiler, two engines, one steam pump, two steam hoisters and other necessary machinery and appliances for treating ore. The product of the lease last year was 685½ tons of zinc ore and 73¾ tons of lead ore, and the output of both ores was sold for \$27,412.

W. B. KANE, AGENT.

The owners of the first lease of 40 acres of land in the southeast quarter of section 21, township 28, range 32, owned in fee by Thos. Connor of Joplin, Mo., are W. B. Kane, M. B. Branch, H. E. Grotwhol, C. M. Olmstead, Wilbur Peterson, J. A. Weeks, Vic E. Silverbury, W. L. Weeks, M. A. Wallace and Harvey Long. The postoffice address of W. B. Kane, agent for the first lessees, is at Carterville, Mo. The first lease has no actual mining, but sub-lease the land under control to three companies: Monticello Mining Co., Croesus Mining Co. and Nature Mining Co. There are three concentrating plants equipped for the proper treatment of ore. There are three shafts, which developed ore at depth of 175 feet. The product of the lease last year was 2,348 tons of zinc ore, valued at \$88,000, and 1,250 tons of lead ore, valued at \$26,853.97, making a total value received for the combined output of both ores.

CROESUS MINING CO.

The Croesus Mining Co. is incorporated under the laws of Missouri with an authorized capital stock of \$50,000, and the officers of the company are John Mackler, W. G. Rice and D. M. Gibson. The company is operating a mining lease on a tract of land owned by Thos. Connor of Joplin, Mo. One shaft is being worked with an average force of 16 miners. The company has a concentrating plant, with daily capacity of 100 tons, equipped with one steam boiler and engine, two steam jigs, two steam hoisters, one steam pump, one crusher and other machinery and apparatus necessary for the proper treatment of ore. The land produced 890 tons of zinc ore last year.

CONTINENTAL ZINC CO.

The Continental Zinc Company is incorporated under the laws of the State of Maine, with a capitalization of \$550,000, and has the following officers: Ernst Thalman, New York City, president; E. H. Moore, Joplin, vice-president; Chas. Haden, Boston, Mass., treasurer; Jere Downs, secretary, and W. P. Leon of Joplin, Mo., general manager for the company. This company owns the fee of 200 acres situated in north one-half of northeast section 9, northwest quarter of section 10, southwest of southwest of section 3, south one-half of southeast of section 4, all in township 27 and range 33. The Continental Company does only a leasing business and receives a royalty from its operators of 15 per cent on zinc ore and 25 per cent on lead ore taken from the land. The land is well developed, there being some 15 shafts operated in the production of ore, ranging in depth from 120 to 195 feet. The improvements on the tract and owned by the lessees consist of fifteen concentrating mills, to which belong twenty boilers, fifteen engines, five steam pumps, twelve steam drills, two air compressors, five air drills, eighteen steam hoisters, 16 crushers, thirty-two steam jigs. The Continental Company maintains an office and scales on the land and the following companies are operating on the tract: Glendale Mining Co., Clover Leaf Mining Co., Kohunoor Zinc Co., Jack Harvard Mining Co., Sancho Panza Mining Co., Linderman Zinc Co., Vandalia Mining Co., Dorothea Mining Co., Boston-New York Mining Co., Prairie State Mining Co., Claud Thornton Mining Co., Hoboken Mining Co. and Imperial Mining Co. The great value of this tract as a producer of zinc and lead ores is shown in the following statement of productions and values for the eight years ending January 1, 1905:

Years.	Tons Zinc ore.	Tons Lead ore.	Total Value.
1897	3,445	131½	\$71,421 90
1898	3,612	81½	85,167 00
1899	4,169	67½	120,900 00
1900	5,040	29½	166,494 00
1901	6,777	156	189,816 00
1902	9,410	33½	321,508 00
1903	7,800	122	280,864 23
1904	7,798	65	306,777 00
Totals	47,686	646	\$1,573,508 00

CLOVER LEAF MINING CO.

The Clover Leaf Mining Co. is incorporated under the laws of Missouri and capitalized for \$35,000. The company is operating under a lease on three acres of land in section 9, township 27, range 33, owned in fee by the Continental Zinc Co. There is one shaft on the lease, 180 feet in depth, and one concentrating plant, equipped with two steam boilers, one engine, one steam pump, two steam jigs, one air compressor, four air drills, one steam hoister, one crusher and other machinery necessary for the proper treatment of ore. The company was engaged for two months last year in the production of ore, and report 21 tons of zinc ore, which brought \$1,033.71.

JACK HARVARD MINING CO.

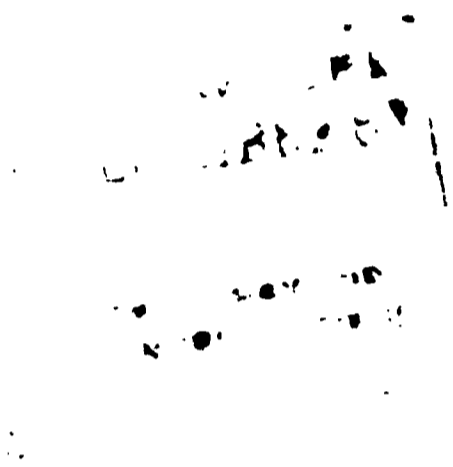
The Jack Harvard Mining Company is incorporated under the laws of the State of Maine and capitalized for \$41,550. The officers of the company are Arthur R. Robertson, president; Frank C. Chamberlain, treasurer; Charles F. Berry, Cornelius A. Davis and Henry C. Delano. The company is operating a mining lease on 5½ acres of land, the fee of which is owned by the Continental Zinc Co. There are three shafts on the land producing ore, and the company is operating with one concentrating plant with daily capacity of 100 tons and equipped with one boiler, one engine, one steam pump, two steam jigs, one crusher and other machinery and apparatus necessary for the proper treatment of ore. The product of this lease last year was 730 7-10 tons, which sold for \$28,381.

BOSTON-NEW YORK MINING CO.

The Boston-New York Mining Co. is not incorporated, and is composed of W. P. Leon and E. H. Moore. This company is operating on

MINING SCENE NEAR JOPLIN, MO.





six mining lots leased from the Continental Mining Co. and located in section 4, township 27, range 33. The lessees have a concentrating plant of 100 tons daily capacity, equipped with one boiler, one engine, one steam hoister, one crusher and other machinery necessary for the proper treatment of ore. The company is operating a shaft, 180 feet in depth, from which it produced last year 132 tons of zinc ore and 9,590 pounds of lead ore, and the combined products were sold for \$5,174.

DOROTHY MINING CO.

The Dorothy Mining Co. of Joplin, Mo., is not incorporated, and is composed of W. E. Webb, S. H. Fullerton, Powell Bros. and R. J. Collins, and W. B. Bash is manager. The company is operating a lease on a tract of mining land owned by the Continental Zinc, Lead Mining and Smelting Co. of Joplin, Mo. There is one shaft on the property 180 feet in depth. The lessees have a concentrating plant, with a daily capacity of 100 tons, and equipped with two boilers, one engine, one steam pump, two steam jigs, one steam drill, one steam hoister, one crusher and other apparatus necessary for the proper treatment of ore. The production of this lease last year was 137,180 pounds of zinc ore and 2,290 pounds of lead ore.

HOBOKEN MINING CO.

The Hoboken Mining Company is incorporated under the laws of Missouri and capitalized for \$5,000. The company is operating one shaft on a six-acre mining tract, owned in fee by the Continental Zinc Co., and located in section 9, township 27, range 33. The officers of the company are Geo. M. Coburn, president and secretary; E. C. Macaulay, treasurer. The company has one concentrating plant, equipped with two boilers, one engine, one steam pump, two steam jigs, one steam drill, one steam hoister, one crusher and other machinery required to constitute a complete mill. The product of the lease last year was 642 tons of zinc ore, which was sold for \$21,204.56.

KOHINOOR ZINC CO.

The Kohinoor Zinc Co. is incorporated under the laws of the State of Maine and capitalized for \$150,000. The officers of the company are Alfred A. Glasier, W. L. Henry, Jas. Milne, H. W. Robinson and Arthur R. Robertson. The company is operating a mining lease on a tract of land owned in fee by the Continental Zinc Co., and has th concentrating plants on the lease, equipped with four steam *boil three engines, seven steam jigs, three steam pumps, five steam hoist*

three crushers and other machinery necessary for the proper treatment of ore. The product of the lease was 1,942.89 tons of zinc ore and 19,120 pounds of lead, which were sold for \$76,412.92.

LINDERMAN ZINC CO.

The Linderman Zinc Co. of Joplin, Mo., is incorporated under the laws of West Virginia and capitalized for \$40,000. The company operates five mining lots on the Continental Zinc Company's land, in section 9, township 27, range 33. There are eight shafts on the lease, varying in depth from 55 feet to 185 feet. The company has one concentrating plant, with daily capacity of 150 tons, and equipped with two steam boilers, one engine, one steam pump, two steam jigs, two steam drills, three steam hoisters, one crusher and other necessary machinery for the proper treatment of ore. The product of the lease was 400 tons of zinc ore and 98,140 pounds of lead ore, which sold for \$19,296.

PRAIRIE STATE MINING CO.

The Prairie State Mining Co. of Joplin, Mo., is incorporated under the laws of Missouri and capitalized for \$150,000. The officers of the company are F. Y. Hamilton, president; C. F. Shinkle, vice-president; C. W. Athey, treasurer, and J. B. Morsman, secretary. The company is operating six mining lots on the Continental Zinc Company's land, and is producing ore from one shaft, the depth of which is 159 feet. The improvements on the lease is one concentrating plant, with daily capacity of 100 tons, equipped with three steam boilers, one engine, two steam jigs, two steam hoisters, one crusher and such other machinery as is necessary for the proper treatment of ore. 605 tons of zinc ore were produced from the land and was sold for \$18,821.50.

SANCHO PANZA MINING CO.

The Sancho Panza Mining Co. of Joplin, Mo., is incorporated under the laws of Missouri and capitalized for \$15,000. The officers of the company are C. E. Clarkson, J. C. Walker and J. H. Wiggins. The company owns a mining lease on six lots, the fee of which is owned by the Continental Zinc Co. There are two shafts on the land producing ore. From August, 1904, to the end of the year the company received the zinc ore it produced. There is one concentrating plant equipped with two boilers, three engines, one steam pump, one crusher and other apparatus needed in the proper

CARL (G. & J. S.) LAND.

INDIANA LEAD AND ZINC COMPANY.

The Indiana Lead and Zinc Co. is not incorporated, and is composed of G. F. C. Carl, S. C. Carl and W. T. Hadley. The company is operating a six-acre mining lease, the fee of which is owned by Geo. and Joseph S. Carl of St. Joseph, Mo. The company has one concentrating plant with daily capacity of 50 tons, equipped with two boilers, one engine, one steam pump, two steam jigs, one hoister and other machinery and apparatus necessary for the proper treatment of ore. Two shafts, 115 and 135 feet in depth, respectively, are being operated, and the product for the 75 days devoted to mining during the year was 70 tons of zinc ore, which was sold for \$2,339.

CONQUEROR ZINC CO.

The Conqueror Zinc Co., with office at Joplin, Mo., is incorporated under the laws of Missouri and capitalized for \$500,000. The officers of the company are Wm. Houk, president and treasurer; Edna C. Houk, vice-president; Edw. Huseman, secretary; H. H. McNeal and A. D. Shockley, directors. The mine herein reported is on 35 acres of land purchased from the Cardinal Zinc and Lead Co., and located in the northeast of northwest of section 6, township 27, range 32. The Conqueror Zinc Co. owns, including this tract, six hundred acres of mining land in fee simple, and about 65 acres under lease. All have been reported except 30 acres in the Carterville district, which is now being drilled with a view of sub-leasing. On the 35-acre tract herein reported three shafts, 80 feet in depth, are being operated. The company has one concentrating plant, equipped with two boilers, one engine, five steam pumps, three steam jigs and other necessary apparatus for the proper treatment of ore. The product from the mines of this property was 1,260 tons of zinc ore, valued at \$40,442, and 84½ tons of lead ore, valued at \$4,696, making a total value for both ores, \$45,138.

CONSOLIDATED TROUP MINING CO

MINE NO. I.

The Consolidated Troup Mining Co. is incorporated under the laws of Missouri and capitalized for \$500,000. The officers of the company are John Morton, president; L. M. Hall, secretary, and Frank Morton,

treasurer. The company owns in fee 40 acres of land in the southeast quarter of section 21, township 33, range 32. It has two concentrating plants, with daily capacity of 180 tons each, which are equipped with four boilers, two engines, four steam jigs, three steam pumps, one air compressor, two air drills, two steam hoisters, two crushers and other machinery and apparatus necessary for the proper treatment of ore. The product of this tract was 874 tons of zinc ore, valued at \$27,700, and 20 tons of lead ore, valued at \$1,113, making a total valuation for both ores of \$28,813.

MINE NO. 2.

Mine No. 2 is on 40 acres of land in section 17, township 33, range 31, owned and operated by the Consolidated Troup Mining Co., under the superintendency of Thos. Douglas. One shaft, 200 feet in depth, is producing ore, and the product last year was 2,000 tons of zinc ore, which was sold for \$73,000. The mining tract has upon it a concentrating plant with daily capacity of 100 tons, and equipped with two steam boilers, one engine, three steam pumps, one air compressor, three air drills, two steam hoisters, one crusher and other machinery and appliances necessary for the proper treatment of ore.

MIGNONETTE MINE NO. 3.

Mignonette Mine No. 3 is located on 24 acres of land in section 24, township 29, range 31, and is owned in fee and operated by the Consolidated Troup Mining Co., under the management of Thos. Douglas. The company has one concentrating plant on the land, equipped with three steam boilers, one engine, two steam pumps, two steam jigs with eleven cells each, two lift pumps, two steam hoisters, one crusher and other machinery and apparatus necessary for the proper treatment of ore. One shaft, 200 feet in depth, is being worked, and the product in 1904 was 1,830 tons of zinc ore, which was sold for \$65,800.

MILL NO. 4.

Mill No. 4, operated by the Consolidated Troup Mining Co., is located on a 16-acre tract of mining land owned in fee by F. A. Dossman of Cincinnati, Ohio, and is in southeast quarter of section 35, township 33, range 34. This tract is west of Joplin, and was formerly known as the Fitzer land. The company has upon it a concentrating plant, with daily capacity of 125 tons, and equipped with two steam boilers, one engine, three steam pumps, three steam hoisters, two steam jigs, one crusher and other machinery and apparatus necessary for the

proper treatment of ore. The product of this property was 830 tons of zinc ore, which was sold for \$26,000. The output for 1904 on all the land owned and controlled by the Consolidated Troup Mining Co. amounted to 5,534 tons of zinc ore, which sold for \$192,500, and 20 tons of lead ore, which sold for \$1,113, or a total for the entire product of \$193,613.00. The total employes of all kinds, mill men and miners, were 93 men.

DAUGHERTY-DAVEY-McMILLAN ESTATE.

DAVEY & SON LEASE.

This tract of mining land, held under first lease by P. N. Davey and T. N. Davey of Carthage, Mo., consists of 60 acres located in the northeast of southeast of section 17, township 28, range 32, and is owned in fee by W. A. Daugherty, T. N. Davey, W. B. Kane and the estate of Wm. McMillan. This mineral producing property has a record of being mined for over twenty years continuously, and during which time large quantities of lead and zinc ore were produced. During the year we have reported as operating on this lease the following companies with concentrating mills: Halls & Co., Muse & Co., Henderson, Donahoo & Co., Zenith Co., Lanacur & Co. The following is the output from this tract of land of lead and zinc ores and their values from 1897 to January 1, 1905:

Year.	Tons Zinc	Tons Lead	Total Value
1897.....	1,441	181	\$29,750 00
1898.....	2,851	464½	72,888 00
1899.....	1,759	254¼	70,098 00
1900.....	2,945½	407½	104,002 00
1901.....	1,776	514	60,886 00
1902.....	1,086	672½	59,800 00
1903.....	984	269⅔	22,198 50
1904.....	784½	186½	87,844 00
Totals.....	□ 18,077	2,900	\$456,006 50

DAUGHERTY & DAVEY LAND.

AMERICAN ZINC, LEAD AND SMELTING CO. LEASE.

The American Zinc, Lead and Smelting Co. holds first lease on 80 acres of mining land located in southeast of southeast of section 17, and northeast of northeast of section 20, all in township 28, range 32, and owned in fee by W. A. Daugherty, T. N. Davey and J. A. Daughe

of Carterville, Carthage and Webb City, Mo. The following sub-lessees are operating on the land, with three concentrating plants: McCright & Co., Mattie L. Co., M. Hibbs, Lykin & Co., Fullerton Mining Co. and Big Hit Mining Co. The product of the lease last year was 826 tons of zinc ore, valued at \$27,695, and 271½ tons of lead ore, valued at \$15,557, and for which was received for both ores the sum of \$43,252.00.

FULLERTON MINING CO.

The Fullerton Mining Co. is not incorporated, and is composed of S. H. Fullerton, M. B. Bush and T. M. Jones of Carterville, Mo. The company is operating a mining tract sub-leased from the American Zinc, Lead and Smelting Co., and owned in fee by Daugherty & Davey of Carterville, Mo. There are two concentrating plants on the property and the production of mineral is from one shaft 180 feet in depth. The product from the tract was 175½ tons of zinc ore, valued at \$6,903.50, and 137½ tons of lead ore, valued at \$6,977, making a total amount received for both ores of \$13,880.50.

MIDWAY CONSOLIDATED MINING CO.

The Midway Consolidated Mining Co. of Joplin, Mo., is not incorporated, and is operating a sub-lease on 20 acres under the American Zinc, Lead and Smelting Co., the land being owned in fee by Davey & Co. The Midway Co. is composed of W. B. Bash, L. N. Jones and S. H. Fullerton, and is working one shaft 150 feet in depth. The company has one concentrating plant, equipped with three boilers, one engine, four steam pumps, one lift pump, two steam hoisters, one crusher and other machinery necessary for the proper treatment of ore. The company is working with a force of 50 employes, 25 of whom are miners, and the output of mineral was 1,101 tons of zinc ore, valued at \$35,399.41, and 28½ tons of lead ore, valued at \$1,604.26, making a total valuation of both ores of \$37,004.

MCCRIGHT & CO.

McCright & Co. control, under sub-lease from the American Zinc, Lead and Smelting Co., 10 acres of mining land owned in fee by Daugherty & Davey of Carterville, Mo. The company operating the land is a partnership, composed of L. B. McCright, Ralph Brooks and Jas. R. They have no concentrating plant and their machinery consists of hand jigs, one boiler, one engine, one steam hoister and one. A part of the year they worked some abandoned and produced 84 tons of zinc ore, valued at \$2,688, and 28½ tons

of lead ore, valued at \$1,596, making a total of \$4,284 received for the combined product.

MIDWAY LEASE.

The Midway Consolidated Mining Co. controls, under sub-lease from the American Zinc, Lead and Smelting Co., 17 acres of mining land owned in fee by T. N. Davey, W. H. Phelps, H. C. Cowgill, B. Hendrickson and W. C. Renfrow, and located in the west one-half of northeast of section 317, township 28, range 32. The company is operating the lease with one concentrating plant, equipped with four boilers, one engine, one steam pump, two steam jigs, one lift pump, two steam hoisters, one crusher and other machinery and apparatus necessary for the proper treatment of ore. The product of the lease for the year was 1,100 tons of zinc ore, valued at \$35,600.40, and 28½ tons of lead, valued at \$1,604.50, making a total amount received for the two ores of \$37,205.00.

DAVIS (KATE M.) LAND.

K. AND B. MINING COMPANY.

The K. and B. Mining Co. of Joplin, Mo., is incorporated under the laws of the State of Missouri and capitalized for \$50,000. The officers of the company are B. A. Keopple, president; P. V. Boomershine, secretary, treasurer and manager. The company is operating a lease, originally controlled by A. Arterburn and H. Connelly, on 12 acres of land owned in fee by Kate M. Davis of Galena, Kansas. The work of the year was confined to prospecting with drill, and six holes were drilled, five of which showed rich ore. When this report was made the company was preparing to sink a mining shaft on the lease.

AYLOR (ELLIOTT) LAND.

CORNUCOPIA MINING COMPANY.

The Cornucopia Mining Co. is not incorporated and was operating six mining lots of the Eclipse Land and Mining Company's lease on the Aylor land near Neck City, Mo., the company being a sub-lessee. There is one shaft sunk to the depth of 185 feet, from which there were mined and sold during the past year 63 tons of zinc ore, valued at \$2,547, and 19 tons of lead ore, valued at \$1,064, making a total value for the two ores of \$3,611.00. The mining improvements consist of a complete concentrating plant, equipped with two boilers, one engine, one steam pump, two steam jigs, one crusher and other necessary machinery.

THE EMPIRE ZINC CO.

The Empire Zinc Co. is incorporated under the laws of Missouri and capitalized for \$300,000. The officers of the company are S. S. Palmer, president; A. P. Cobb, secretary and H. R. Boree, resident manager. The company owns 431 acres in Jasper county, described as follows:

LANDS OWNED BY EMPIRE ZINC COMPANY IN THE YEAR 1904.

Brookside, 182.32 acres.—The west half of the northeast quarter, and the southeast quarter of the northwest quarter, and the northeast quarter of the southwest quarter of section 1, township 27, range 34, and the southeast quarter of the northwest quarter of section 12, township 27, range 34.

Bright, 29 acres.—The southeast quarter of the southwest quarter of section 1, township 27, range 34.

Eagle, 200 acres.—The west half of the southwest quarter of section 15, township 27, range 33, and the west half of the southeast quarter of section 16, township 27, range 33, and the southeast quarter of the southeast quarter of section 16, township 27, range 33.

Smelter Reserve, 20 acres.—The south 1102.1 feet of the east 666.6 feet of the northeast quarter of the northeast quarter of section 9, township 27, range 33; and the northwest quarter of the northwest quarter of the northwest quarter of section 10, which lies south of mining lots 53 to 38 and west of the Empire Zinc Company's first addition to Joplin, township 27, range 33; lots 102, 103, 104, 105, 106 of the Empire Zinc Company's first addition to the city of Joplin.

The company does a leasing business, and the following lessees are operating upon the land: Utopian Mining Co., Power Mining Co., Alice H. Mining Co. and C. H. Sexton. The improvements on the property consist of four concentrating plants, equipped with four boilers, four engines, four steam pumps, four steam hoisters, one horse hoister, four crushers and other machinery and apparatus necessary for the proper treatment of ore. The product of this mineral tract last year was 3 tons of zinc ore, valued at \$108,751, and 201½ tons of lead, valued at \$12, making a total value of both ores of \$120,319.00.

POWER & CO. LEASE.

Joplin, Mo., is a corporation organized under the laws of Missouri, capitalized at \$50,000. The officers of the com-

pany are C. W. Power, president, and W. P. Leon, secretary and treasurer. The company controls about five acres of mining land, under first lease, from the Empire Zinc Co., which is located in section 9, township 27, range 33. The improvements on the lease is one fully equipped concentrating plant, and the mineral product last year was 1,463 tons of zinc ore and 269,300 pounds of lead ore.

ALICE H. MINING CO.

The Alice H. Mining Co. is incorporated under the laws of Missouri, and capitalized for \$25,000. The officers of the company are E. H. Moore, president; W. P. Leon, secretary and treasurer. The company is operating a mining lease on four mining lots, owned by the Empire Zinc Co., the land being located in section 9, township 27, range 33. The improvements on the property consist of one concentrating plant, with daily capacity of 150 tons, and equipped with two boilers, two engines, two steam jigs, one steam hoister, one crusher and other machinery and apparatus necessary to constitute a complete mill. There is one shaft on the lease producing ore and the output last year was 658 tons of zinc ore and 44,740 pounds of lead ore, which were sold for \$29,955.33.

C. E. ELLIOTT LAND.

OLD JUDGE MINING CO. LEASE.

The Old Judge Mining Co. is incorporated under the laws of Missouri, and capitalized for \$50,000. The officers of the company are V. T. Price, president; H. J. Grotowohl, vice-president; Jas. E. Cortell, treasurer, and C. M. Olmstead, secretary. The company is operating a mining lease on 8 acres of land, situated in section 31, township 28, range 32, the fee of which is owned by C. E. Elliott of Oronogo, Mo. One shaft has been sunk to the depth of 180 feet, in which has been developed and mined during a part of the year, zinc and lead ores to the value of \$6,097.06. The work in the mine during the year was largely in the nature of development and in the improvement of the plant. There is a complete 150 tons daily capacity concentrating plant erected on the lease, equipped with two boilers, one engine, three steam pumps, two steam jigs, one air compressor, four air drills, one steam hoister, one crusher and other machinery and appliance required for the proper treatment of the ore.

EWING LAND.

DEAD HOG MINING CO.

The Dead Hog Zinc and Lead Mining Co. is a corporation organized under the laws of Missouri, and capitalized for \$20,000. The officers of the company are Elmor Ogden, president; Wm. Caylor, vice-president; L. John, secretary and treasurer. The company operates a mining lease of $4\frac{1}{2}$ acres, owned in fee by Major Ewing of Joplin, Mo. The improvements on the lease consist of one concentrating plant, equipped with two boilers, one engine one steam pump, one steam jig, one steam hoister, one crusher and other apparatus needed for the proper treatment of ore. There is one shaft on the lease from which both lead and zinc ore is produced, and during a part of the year were mined and sold 30 tons of zinc ore and $7\frac{1}{2}$ tons of lead ore for \$1,350.

FENNER LAND.

MAIN ST. MINING CO.

The Main St. Mining Co. of Carthage, Mo., is a corporation organized under the laws of Missouri, and capitalized for \$50,000. The officers of the company are W. R. Lyon, president; L. E. Archias, vice-president, and Geo. Webster, secretary and treasurer. The company owns a 40-acre mining lease, located in northeast of northeast of section 16, township 31, the fee of which is owned by D. R. and Lucy H. Fenner. The company sub-leased four acres of the land to E. Hollingsworth & Co. and on the sub-lease was reported one concentrating plant, with daily capacity of 100 tons. The sub-lessees forfeited their right on the land and the mill was sold by the Main St. Mining Co.. The only product of the land last year was 26 tons of zinc ore, which sold for \$827.

FIRST NAT. BANK OF CARTERVILLE LAND.

EDGARS-CORL LEASE.

land controlled under this lease consists of 10 acres, the northwest of northwest of section 21, township owned in fee by the First National Bank of Carter-ayles and John B. Sampson of Jackson county, Geo. Home, G. F. Edgars and W. A. Corl,

the first of Carterville and the latter two of Webb City, Mo. The land is sub-leased to Joseph Lewis and W. E. Moore. There is no concentrating plant on the lease and the production of ore is from one shaft 190 feet in depth. The product of the lease was $1\frac{1}{8}$ tons of zinc ore and $56\frac{1}{4}$ tons of lead, which were sold for \$3,086.

FOX HEIRS LAND.

RED FOX MINING CO. LEASE.

The Red Fox Mining Co. is not incorporated, and is composed of B. M. Henry, Geo. Ball, W. C. Ball, C. P. Hendrickson and W. S. Cunningham, postoffice address, Webb City, Mo. The Red Fox Co. hold first mining lease on 20 acres of land, owned in fee by the Fox heirs, and located in section 16, township 29, range 32. The following companies hold parts of the land under sub-leases: Good Friday Mining Co., Luke & Brown and Teddy R. Mining Co. The improvements on the property consist of three concentrating plants, with daily capacity each of 100 tons, and equipped with five boilers, three engines, six steam jigs, four steam drills, four steam hoisters, three crushers and other machinery and apparatus necessary for the proper treatment of ore. The product of the lease was 3,682 tons of zinc ore, which were sold for \$123,324.00.

LUKE & BROWN MINING CO.

The Luke & Brown, 1 and 2, Mining Co. of Carthage, Mo., are operating a sub-lease on the Fox heirs' land. The tract occupied consists of $7\frac{1}{2}$ acres in section 9, township 29, range 32. The company is operating with one concentrating plant, duly equipped, and the product of the sub-lease last year was 178 tons of zinc ore, which were sold for \$5,400.00.

GAGE & CO. LAND.

WAMACK BROS. LEASE.

Wamack Bros. of Prosperity, Mo., control, under first lease, 10 acres of mining land, owned in fee by Gage & Co. of Diamond, Mo., and located in the northwest of northwest of section 2, township 27, range 32. The lessees have no concentrating plant, and their machinery consists of one boiler, one steam pump, one horse hoister, four hand jigs and other apparatus needed in handling and treating ore. They are operating one shaft 60 feet in depth, with a force of 8 miners, and produced last year 400 tons of lead, which brought in the market the sum of \$22,800.

GENERAL LEAD AND ZINC CO.

The General Lead and Zinc Co. of Joplin, Mo., is incorporated under the laws of Missouri, and capitalized for \$300,000. The officers of the company are B. M. Robinson, president; M. F. Robinson, secretary and treasurer. The company owns in fee 40 acres of land in the northwest of section 28, township 28, range 32, and the following lessees are operating the land: Robinson & Nancil, J. G. and L. Wamack and Patton & Dodge. This land is a new mining tract, on which three large and promising mines were opened up when this report was made. No ore has been sold yet, and efforts for the year ended August 1, directed toward improving and prospecting the property. In addition to this mining property, the General Lead and Zinc Co. controls under lease, 90 acres of land, on which development work has just been started.

GLOVER LAND.

This tract of mining land is owned in fee by C. S. Glover and Mrs. Lillie Taylor, both of Joplin, Mo., and embraces 156 acres in sections 5 and 6, in township 27, range 33. The following companies, under first lease, are operating the land: Cataract Mining Co., Elliott Lead and Zinc Co. and Duncan, Morgan & Co. The improvements on the lease consist of three boilers, two engines, two steam jigs, four steam drills, three steam hoisters, two crushers and other machinery necessary to constitute a complete concentrating plant. The lease produced 6724 tons of zinc ore, valued at \$23,606, and 6 tons of lead, valued at \$295, making a total valuation for both ores of \$23,901.00.

GRANBY MINING AND SMELTING CO.

JOPLIN PROPERTY.

(In charge of John H. Stephens, Supt., with office at Joplin.)

The mining lands of the Granby Mining and Smelting Co., at Joplin, are classed among the best producing properties of the southwest. Their property is located, or much of it, inside the corporate limits of Joplin under the superintendency of John H. Stephens, who has been with the company for twenty years.

The company owns 988 acres in the Joplin district proper, on which there are thirteen concentrating mills and five hand jig plants.

At the end of December 31, 1904, 8,985 tons of zinc ore





and 1,433 $\frac{3}{4}$ tons of lead ore were produced and sold from land owned by the company. The total amount received for this ore was \$407,246.00. The average price received at the mines per ton for zinc ore was \$36.60, and the average price received at the mines per thousand for lead ore was \$27.37. An average of 275 miners are employed in the mines of this property, and 12 to 15 other employes, at average wages of \$2.35 per day for each employe.

The following sub-lessees are operating the land:

Bay State Zinc Mining Co.—10 acres, 15 and 20 per cent royalty, Joplin, Mo.

Amalgamated Zinc and Lead Co.—18 acres, 15 per cent royalty, Joplin, Mo.

Royal Blue Mine—13 acres, 15 and 20 per cent royalty, Joplin, Mo.

Brancher Mining Co.—8 acres, 15 and 20 per cent royalty, Joplin, Missouri.

Omega Mining Co.—6 acres, 15 per cent royalty, Joplin, Mo.

Williams' Mining and Milling Co.—15 acres, 15 and 20 per cent royalty, 700 Com. Bldg., Kansas City, Mo.

B. and H. Mining Co.—10 acres, 15 and 20 per cent royalty, Joplin, Missouri

Miami Mining Co.—5 acres, 15 and 20 per cent royalty, Joplin, Mo.

Solitaire Mining and Milling Co.—5 $\frac{1}{2}$ acres, 15 per cent royalty, Joplin, Mo.

J. W. Kirkbride & Priddy, 25 acres, 15 per cent royalty, Findley, Ohio.

Pennsylvania Mining and Smelting Co.—7 acres, 15 per cent royalty, Joplin, Mo.

Cliff Lead and Zinc Co.—20 acres, 15 and 20 per cent royalty, Joplin, Mo.

O. A. Newell—8 acres, 15 and 20 per cent royalty, Joplin, Mo.

Mays Milling Co.—Tailings, 10 per cent royalty, Joplin, Mo.

Gravity Milling Co.—Tailings, 7 $\frac{1}{2}$ per cent royalty, Joplin, Mo.

Themer Co.—Tailings, 10 per cent royalty, Joplin, Mo.

Oak Mining Co.—Tailings, 10 per cent royalty, Joplin, Mo.

Scott, Moonechaur & Co.—6 acres, 20 and 25 per cent royalty, Joplin, Missouri.

James Roach & Co.—10 acres, 20 and 25 per cent royalty, Joplin, Missouri.

Chenoweth & Co.—5 $\frac{1}{2}$ acres, 20 and 25 per cent royalty, Joplin, Mo.

W. B. Hudson—7 acres, 20 and 25 per cent royalty, Joplin, Mo.

Prince Henry Mining Co.—4 acres, 20 and 25 per cent royalty, Joplin, Mo.

W. E. WHITNEY LEASE.

W. E. Whitney is operating a lease on the Granby Mining and Smelting Co. land, with A. S. Baldry, manager. The improvements on the lease consist of one concentrating plant, equipped with one boiler, one engine, two steam jigs, one crusher and other machinery and apparatus necessary for the proper treatment of ore. Work was begun about the middle of October, and until the end of the year 84 tons of zinc ore and 6,600 pounds of lead ore were produced.

SUN-PERCH MINING CO. LEASE.

The Sun-Perch Mining Co. is operating a mining lease on the Granby Mining and Smelting Co. land, and E. N. Cunningham is superintendent. Ten acres of land is controlled under the lease, and upon which is a concentrating plant, equipped with two boilers, two engines, two steam jigs, two steam drills, one hoister and other machinery and apparatus. The company only worked a few weeks, and produced 15 tons of zinc ore, after which the lease was sold.

B. & H. MINING CO.

The B. and H. Mining Co. is incorporated under the laws of Missouri, with an authorized capital stock of \$400,000.00, and is officered as follows: R. E. Bruner, president and treasurer; A. C. Sweet, secretary; Frank G. Thrall, J. H. Harrington and Judge M. A. Fyke, directors; M. A. Fyke, counsel; Eugene Barry, superintendent. All are residents of Kansas City except Frank G. Thrall, who resides at Eureka, Kansas, and Eugene Barry at Joplin, Missouri.

The general offices of the company are maintained at No. 812 Grand avenue, Kansas City, Missouri.

The B. and H. Mining Co. are operating what is known as the Tennessee, and located on the Granby Mining and Smelting Company's land at Chitwood, about two miles northwest of Joplin, consisting of a first lease on 13 blocks of ground, at 15 per cent royalty on zinc and 20 per cent on lead.

The company has one of the best mills in the district, 225 tons daily capacity. During the last year it installed a new Sullivan air compressor, to run eight drills, and done extensive development work and drilling. It has several large faces of ore opened up and runs for the mill already exposed. During the last year has been doing principally development work, and during the year sold zinc ore to the value of \$65,871.79, and lead ore to the value of \$57.54, or a total of \$69,529.33.

SCOTT, MOONEYHAM & CO. LEASE.

Scott, Mooneyham & Co. are operating an eight-acre lease in section township 27, range 33, owned in fee by the Granby Mining and Smelting Co. The lessees have no concentrating plant, and are working one shaft 100 feet in depth. Much of the time of the company last year was spent in sinking shafts, and the product of their lease was $4\frac{3}{4}$ tons of zinc ore and 11,980 pounds of lead ore, which were sold for \$522.42.

AMALGAMATED ZINC AND LEAD CO. LEASE.

The Amalgamated Zinc and Lead Co. is incorporated under the laws of New Jersey, and capitalized for \$200,000. H. E. Kingsbury is resident superintendent, with office at Joplin, Mo. The company is operating a mining lease of $23\frac{1}{2}$ acres in the northeast of section 4, township 27, range 33, the land being owned in fee by the Granby Mining and Smelting Co. The improvements on the lease consist of one 150-ton daily capacity concentrating plant, equipped with three boilers, one engine, one steam pump, four steam jigs, four steam drills, three steam hoisters, one crusher and other machinery and appliances necessary in the proper treatment of ore. The company works two shafts, 158 and 189 feet in depth, respectively, and the product of the lease was 902 tons of zinc ore and 50,260 pounds of lead ore, which were sold for \$36,378.16.

BAY STATE ZINC CO. LEASE.

The Bay State Zinc Mining Co., with office at Joplin, Mo., control 17 acres of land, owned in fee by the Granby Mining and Smelting Co., and located in the northeast quarter of section 4, township 34, range 33. This lease is operated by a sub-lessee, the Mays Milling Co., and the improvements on the lease consist of two concentrating plants, with daily capacity of 150 tons each, and equipped with three boilers, two engines, two steam pumps, five steam jigs, four steam hoisters, one crusher and other machinery necessary for the proper treatment of ore. The product of the lease was 1,000 tons of zinc ore and 570,300 pounds of lead ore, which were sold for \$49,798.92.

OMEGA MINING CO. LEASE.

The Omega Mining Co. is incorporated under the laws of Connecticut, and capitalized for \$4,500. H. A. Bullard is secretary and treasurer. The company controls 11 acres of the Granby Mining and Smelting Co.

land, located in the southwest quarter of section 33, township 34, range 33. There is upon the lease a fully equipped concentrating plant, and the company produced 350 tons of zinc ore and 98,480 pounds of lead ore, which were sold for \$15,294.

MAYS MILLING CO.

The Mays Milling Co. is a sub-lessee on the Granby Mining and Smelting Co. land. The company is engaged in running tailings from other mills and paying land owner 15 per cent royalty.

GRANBY MINING AND SMELTING CO.

ORONOGO PROPERTY.

(Office at Oronogo, F. M. Downing, superintendent in charge.)

The holding of the Granby Mining and Smelting Co. at Oronogo, Mo., aggregate 1,236.19 acres.

Nearly all the mining that has been done at Oronogo during the past eight years has been on less than forty acres, from which there have been taken an aggregate of 78,550.25 tons of zinc ore and 2,004.90 tons of lead ore, selling for \$2,561,362.55.

The mines at Oronogo have been the most wonderful and richest in the entire Joplin district. There are 12 concentrating mills in operation on this land at present, and nearly all taking ore from the 165-foot level. The abundant supply of mineral on this entire tract of land has been well demonstrated by the drill, and good ore beds have been found to exist almost 100 feet below any of the mines now being worked. There is no possible estimation which can be made on the value of zinc and lead ores which will be produced on this property in the years to come. Following is total tonnage and value for eight years past:

Year.	Tons zinc ore.	Tons lead ore.	Total values.
1897.....	1,965.25	287.50	\$47,874 85
1898.....	9,568.00	136.00	233,075 00
1899.....	18,995.00	315.50	686,654 00
1900.....	14,712.00	46.00	495,090 00
1901.....	12,081.00	451.00	344,639 00
1902.....	7,751.00	271.50	254,767 00
1903.....	7,674.00	235.40	273,708 98
1904.....	5,854.00	262.	225,558 72
<i>Totals.....</i>	78,550.25	2,004.90	\$2,561,361 55

section 36, township 29, range 33. The improvements on the mining lease consists of one concentrating plant, equipped with two boilers, one engine, three steam pumps, one air compressor, two air drills, two steam hoisters, one crusher and other machinery necessary for the proper treatment of ore. The present lessee operated the land from June 1, 1904, and during the remainder of the year produced 570 tons of zinc ore, which were sold for \$19,331.97.

ROSS MINING CO. LEASE.

The Ross Mining Co., composed of F. C. Ross, president; Wm. Saulson, vice-president, and A. Simon, secretary and treasurer, is incorporated under the laws of Michigan and Missouri, and capitalized for \$100,000. The company controls three acres of mining land, owned by the Granby Mining and Smelting Co., and on which is a concentrating plant, with daily capacity of 150 tons, and equipped with three boilers, one engine, one steam pump, one air compressor, three air drills, two steam hoisters, one crusher and other machinery and apparatus required in the proper treatment of ore. The company did sixty days' work in the production of ore last year, and report 78 tons of zinc ore, which were sold for \$2,340.

GUENGERICH AND OTHERS' LAND.

LYMAN G. MINES AND MILLING CO. LEASE.

The Lyman G. Mines and Milling Co. is a corporation organized under the laws of New Jersey, and capitalized for \$50,000. The company controls, under lease, 30 acres of mining land in section 20, township 27, range 32, owned in fee by Ch. Guengerich and others. F. M. Cummings is resident manager for the company, and the work last year consisted of developing and improving the lease, and no mineral was produced.

GUND MINING CO. LAND.

GRIER MINING CO. LEASE.

The Grier Mining Co., with office at Webb City, Mo., is incorporated under the laws of Missouri, and capitalized for \$24,000. The officers of the company are C. W. Rinehart, president; Howard Gray, vice-president, and W. B. Shackelford, secretary and treasurer. The company holds first lease on 40 acres of mining land, owned in fee by the Gund Mining Co. of Lexington, Ky., and located in the northwest of northwest of section 29, township 28, range 31. The lease is improved with one

concentrating mill of about 75 tons daily capacity, and the following sub-lessees are operating upon the lease: A. and B. A. Green & Co., Bunton & Green, A. H. Laughead & Co., Line & Magee Lead and Zinc Co., and Connell, Keller & Co.

The Grier Mining Co.'s pumping plant was destroyed by fire in April of last year, and has not been rebuilt. Since the accident the company has furnished pumps to its sub-lessees, and they are doing their own pumping. When this report was sent arrangements were being made by the company for the development of deep ore on the lease by draining the land so as to permit of working to a depth of 175 feet. The product of the lease last year was 416 $\frac{3}{4}$ tons of zinc ore, valued at \$13,837; 97 $\frac{1}{2}$ tons silicate, valued at \$1,460, and 52 $\frac{3}{4}$ tons of lead ore, valued at \$2,790, making a total valuation of the aggregated product of \$18,087.00.

GUINN (JOHN C.) LAND.

John C. Guinn of Joplin, Mo., owns in fee 640 acres of mining land in sections 7 and 8, township 28, range 32. Mr. Guinn is not engaged in mining, but the following lessees are operating the land: A. E. Bendelori, M. C. Conkey, Premier Lead and Zinc Co., J. M. Kerr, W. W. Wampler, T. H. Stepp, Aaron Shubart and Thos. McCroskey. The mining property has upon it four fully equipped concentrating plants, and the mineral produced upon it last year consisted of 1,512 tons of zinc ore, valued at \$59,446.37, and 422 $\frac{1}{2}$ tons of lead ore, valued at \$23,440.18, making a total value for both ores of \$82,887.00.

ELECTRICAL ZINC AND LEAD MINING CO. LEASE.

The Electrical Zinc and Lead Mining Co. is a corporation organized under the laws of Missouri, and capitalized for \$100,000. M. C. Conkey is manager for the company, which controls 40 acres of mining land, owned by J. C. Guinn of Joplin, Mo., and located in southeast of northwest of section 7, township 28, range 32. Twelve lots of this mining tract is sub-leased to the Chicago Lead and Zinc Mining Co., and the improvements on the lease consist of two concentrating mills, fully equipped, one of which is operated by electric power. The output from the lease last year was 159 $\frac{1}{2}$ tons of zinc ore, valued at \$7,123, and 21 $\frac{1}{2}$ tons of lead ore, valued at \$1,252, making a total value for both ores of \$8,375.

BLACK CAT MINING CO. LEASE.

The Black Cat Mining Co. is incorporated under the laws of Missouri, and capitalized for \$100,000. The officers of the company are

J. Newhouse, president; S. Hartman, vice-president; J. T. Gillett, 2nd vice-president, and N. G. Twyman, secretary and treasurer. The company controls 80 acres of land, under first lease, owned in fee by John C. Guinn, and located in northeast $\frac{1}{2}$ of section 7, township 28, range 32, and was engaged during the year in sinking shaft and building a concentrating mill.

PREMIER LEAD AND ZINC CO. LEASE.

The Premier Lead and Zinc Co. is a corporation organized under the laws of South Dakota, and capitalized for \$400,000. The company is operating a mining lease of 40 acres, owned by Jno. C. Guinn of Joplin, Mo. The officers of the company are E. W. Christy, president; M. S. Able, vice-president; J. M. Douney, secretary and treasurer. The lease is improved with a 200-ton capacity concentrating mill, fully equipped for the proper treatment of ore, with electric motor power. Last year's product of this lease was 354 tons of zinc ore, valued at \$16,800, and 105 tons of lead ore, valued at \$5,827, making a total valuation for both ores of \$22,627.00.

MERCANTILE MEDAL MINING CO. LEASE.

The Mercantile Medal Mining Co., with Thos. Douglas, manager, is operating a mining lease on 40 acres of land in the southwest of section 7, township 29, range 32, owned in fee by J. C. Guinn. Two shafts are reported sunk to the depth of 175 feet, in which lead and zinc ore have been developed, and the lease is being improved by the addition of the second concentrating mill. There were mined and sold on this lease 365 tons of zinc ore, valued at \$14,100, and 119 $\frac{1}{2}$ tons of lead ore, valued at \$6,682, making a total value for both ores of \$20,782.

CHICAGO LEAD AND ZINC CO. SUB-LEASE.

The Chicago Lead and Zinc Co. control, under sub-lease, 13 $\frac{1}{2}$ acres of mining land, owned in fee by J. C. Guinn of Joplin, Mo., and located in the southeast of northwest of section 7, township 28, range 32. The company is incorporated under the laws of Arizona, and capitalized for \$200,000. The improvements on the lease consist of one concentrating plant, with daily capacity of 150 tons, and equipped with three boilers, one engine, two steam pumps, three five-cell steam jigs and other machinery necessary for the proper treatment of ore. The product of the lease was 174 tons of zinc ore, valued at \$6,565, and 24 tons of lead ore, valued at \$1,344, making a total value for both ores of \$7,909.

RANDOLPH MINING CO. LEASE.

The Randolph Mining Co., a corporation organized under the laws of the state of Ohio, and capitalized for \$10,000, hold first lease on 40 acres of mining land, owned in fee by J. C. Guinn of Joplin, Mo. The land is located in the northeast of section 7, township 28, range 32, and the following companies control, under sub-lease, 10 acres each of this tract: Ground Floor Mining Co. and Bishop & Co., both with postoffice address at Joplin, Mo. This is a new lease, and the operations upon it have been wholly in the nature of prospecting and improvement.

HARPER (N. J.) LAND.

COTTONWOOD MINING CO. LEASE.

The Cottonwood Mining Co. is incorporated under the laws of Missouri, and capitalized for \$36,000. The officers of the company are Frank Nicholson, president; C. W. Nicholson, vice-president, and J. W. Trich, secretary. The company controls, under first lease, 12 acres of mining land, located in section 30, township 28, range 33, and owned in fee by N. J. Harper. The lease is improved with one concentrating plant, with daily capacity of 100 tons, and equipped with two boilers, one engine, two steam jigs, three steam pumps, one air compressor, two air drills, one steam hoister, one crusher and other machinery and apparatus required for the proper treatment of ore. The mineral product of the lease was 989 tons of zinc ore and 15 tons of lead ore, which were sold for \$30,457.

HACKNEY LAND.

SPARROW MINING CO. LEASE.

The Sparrow Mining Co. is not incorporated. The company holds lease on 9 mining lots, located in northeast quarter of section 1, township 29, range 33. The concentrating plant on the lease was just installed when this report was made. The lease produced $41\frac{1}{2}$ tons of zinc ore, which was sold for \$1,792.70.

HAWORTH LAND.

HANNUM & HAWORTH LEASE.

This company is not incorporated, and is composed of P. E. Hannum, Jerry Haworth, A. W. Aylor and Jacob Litteral. The company controls, under first lease, 18 acres of mining land, located in south $\frac{1}{2}$ of southwest of northwest of section 15, township 29, range 32, and owned

in fee by the heirs of L. Haworth, deceased. The following mining companies control, under sub-lease, four lots each of this tract: O K Mining Co. and Craw Dad Mining Co. The lease is improved with one concentrating plant, fully equipped for the proper treatment of ore. There is only one producing mine on the land, and that is operated by the O K Mining Co. The output of the mine was 42 tons of zinc ore, which was sold for \$2,063.72.

HAWORTH (JAS.) LAND.

HANNUM, STICKNEY & CO. LEASE.

A partnership company, composed of P. E. Hannum, C. A. Shaw, Robt. Stickney and Jas. Luke, control, under first lease, 14 acres of mining land, located in southwest of northwest of section 15, township 29, range 32, and owned in fee by Jas. Haworth of Alba, Mo. The land is sub-leased to the following companies: Hannum & Stickney, John Derby & Co. and Prigmore & Co. This lease is now only in the prospecting stage, and no ore has yet been produced upon it. A concentrating plant was being erected on the lease by Derby & Co. when this report was sent in.

HAYDEN LAND.

ALBATROSS MINING CO.

This company holds a first lease on 40 acres of the above-named land, located in section 15, township 29, range 32. The company owns one concentrating mill, fully equipped with a capacity of 100 tons per day. During the year a new shaft was sunk to the 252-foot level and a drift driven 75 feet. The work was largely development, and 88 tons of zinc ore secured and disposed of, and sold for \$2,923. The employes were seven miners and five mill and top men.

HERRIN-BRINKERHOFF LAND.

WILLAPUS WALLAPUS MINING CO. LEASE.

This company was operating a mining lease on a tract of mineral located in the southeast of northwest of section 2, township 27, 34, and consisting of 27 acres. The land is owned in fee by Joseph , Wm. E. Brinkerhoff and others of Stockton, Mo. The mine in during the month of July, and nothing has been done since that. Before the accident 6½ tons of zinc ore and 15½ tons of lead ore and sold for \$1,006. The work on the lease consisted largely prospecting.

HILL (ISAAC) LAND.

BROOKLYN MINING CO. LEASE.

The Brooklyn Mining Co. control, under first lease, a tract of mining land, located in section 4, township 27, range 32, and owned in fee by Isaac Hill of Hillsboro, Ill. The company is operating the lease, with a 100 tons daily capacity concentrating plant, equipped with two boilers, one engine, one steam pump, two steam jigs, one steam drill, two steam hoisters, one crusher and other machinery and apparatus necessary for the proper treatment of ore. One shaft on the lease, 140 feet in depth, is yielding both lead and zinc ore, and the product was 1,997 tons of zinc ore, valued at \$71,585.40, and 66½ tons of lead ore, valued at \$3,543.40, making a total value for both ores of \$75,129.80.

HOMESTEAD ZINC AND LEAD CO.

This company owns 80 acres of mining land, situated in sections 17 and 20, township 28, range 32. The company operates its own holdings, and has a concentrating mill, with 100 tons daily capacity, and fully equipped with machinery and apparatus necessary for the proper treatment of ore. One mill on this property, built by W. G. Bryant, was destroyed by fire in February. One shaft, 190 feet in depth, is being worked, and the product was 1,051 tons of zinc ore, valued at \$38,291, and 24½ tons of lead ore, valued at \$1,335, making a total value for both ores of \$39,626.

HONEY MINING LAND.

Walter Honey, Fred Post, O. Richardson, Roy Wiley, C. A. Emes and F. Cathers hold a first lease on 4 acres of the land, same located in section 16, township 29, range 32. The postoffice address of the first lessees is at Alba, Mo. The equipment embraces a 100-ton concentrating plant, with all necessary machinery for doing a large business. One mine was in operation for a short time, producing during its development 80 tons of zinc ore, which sold for \$2,969. The ore was reached at the 180-foot level, there being employed for 60 days an average of four miners and five other help.

HORTON LAND.

The B. F. Horton Land is located in the southeast quarter of section 33, township 28, range 32, and consists of 30 acres. The land is considered first lease, by a company composed of the following parties

S. S. Sencenbaugh, J. O. Mason, S. N. Hooder, J. J. Luck, O. C. Kemp and Geo. Herrmann. The operations of the company last year were directed toward sinking shafts and improving the lease with concentrating mill, and no production of ore is reported. When this report was made the company was preparing to choose a name and incorporate under the laws of Missouri.

HORTON & SMITH LAND.

MULBERRY MINING CO. LEASE.

This 40 acres of mining land, located in northeast of northwest of section 9, township 27, range 32, is owned by B. F. Horton of Center-ville, Mo., and Lucy K. Smith of St. Louis. The land is now held under lease by L. C. Henderson and Geo. E. Booth of Webb City. The books of the company operating the lease during the first part of the year were burned, and the output could not be reported. There has been no mining on the property since.

HILL & COWGILL LAND.

HUDSON MINING CO. LEASE.

The Hudson Mining Co. is incorporated under the laws of Missouri, and capitalized for \$50,000. The officers of the company are Gracy Waller, president; K. H. Waller, secretary, and W. B. Waller, treasurer and manager. The company holds first lease on 60 acres of mining land in the hands of the Union Trust Co., St. Louis, and owned in fee by Frank Hill, H. C. Cowgill and J. O. Davidson. The property is located in section 17, township 28, range 31, and is improved with two concentrating mills, fully equipped. The Rose Valley Mining Co. control, under sub-lease, two lots, and both companies are operating the land. There are two shafts on the lease, 185 and 210 feet in depth, and the product of the property was 1,739 tons of zinc ore, which sold for \$62,604.

HUMPHREY LAND.

PINE BLUFF MINING CO. LEASE.

The Pine Bluff Mining Co., composed of John O'Connell and W. L. Toney of Joplin, Mo., control, under first lease, 7 acres of mining land in the southwest quarter of section 6, township 27, range 32, and owned in fee by E. A. Humphrey of Jordan, N. Y. The property is improved with one concentrating plant, with daily capacity of 100 tons, and equipped *with three boilers, two engines, two steam jigs, one steam pump, one steam hoister, one crusher and other machinery and apparatus required*

for the proper treatment of ore. The product of the lease was 116 tons of zinc ore, valued at \$3,995, and 2 $\frac{3}{4}$ tons of lead ore, valued at \$131, making a total value for both ores of \$4,126.

IRVIN LAND.

PICKET & CO. LEASE.

Picket & Co. hold, under first lease, 80 acres of mining land, located in the southeast quarter of section 7, township 27, range 33, and owned in fee by Sam'l Irvin Land and Mining Co., a Missouri corporation. The lessees prospected the land until August, 1904, when they sub-leased portions of the tract to J. D. Degginger and others, and W. B. Bash and S. W. Floorman. There are two shafts on the property producing ore, and there were produced and sold on the lease 188 $\frac{3}{4}$ tons of zinc ore and $\frac{3}{4}$ ton of lead ore, for \$5,529.40. There is no concentrating mill on the lease, and the work has been largely in the nature of prospecting and improvement of the mines.

ISHPEMING MINING CO. LAND.

RED BIRD MINING CO. LEASE.

The Red Bird Mining Co. is a co-partnership, composed of H. Humphreys and S. J. Reed, both of Joplin, Mo. They control, under first lease, 80 acres of mining land, located in the southeast quarter of section 35, township 27, range 30, and owned in fee by the Ishpeming Mining Co. of Carl Junction, Mo. During the larger portion of the year 1904 the property was idle. The Red Bird Mining Co. secured its lease during the latter part of the year, and its efforts were all directed in development work, such as sinking shafts, etc. Their mine is now an active producer, and the indications are that it will continue as such for a long time.

JOHN JACKSON INVESTMENT COMPANY.

This company, while owning a large body of mineral land, does not engage as a company in mining. The company leases its lands to mining companies or individuals. Its lands consist of 3,030 acres, located in the most productive regions of the State, 2,020 acres of which is located in and around the city of Joplin, while 1,010 acres lie just across the Jasper county line in Newton county.

For the year ending December 31, 1904, the output from the land of this company was as follows:

JANUARY 1, 1904, TO DECEMBER 31, 1904.

	Lbs.	Amount.
Zinc	5,898,400	\$98,297 99
Lead	180,770	4,509 86
Dry Bone.....	72,480	1,247 06
Total.....	5,696,650	\$99,055 51

	Per ton.
Average price of zinc.....	\$24 06
Average price of lead.....	49 90
Average price of dry bone.....	84 50

LIST OF LESSEES.

John Jackson Mining Co., Joplin Mo.
Bay State Zinc Mining Co., Joplin, Mo.
Kentucky Mining Co., Joplin, Mo.
Katydid Mining Co., Joplin, Mo.
Dr. Gideon C. Segur, 64 Farmington avenue, Hartford, Conn.
Yale & O'Brien, Joplin, Mo.
Kansas City Mining and Milling Co., Joplin, Mo.
Alsatian Lead and Zinc Co., Joplin, Mo.
Thanksgiving Lead and Zinc Co., 8th and Locust Streets, St. Louis, Missouri.
Lone Oak Mining Co., Joplin, Mo.
Col. H. H. Gregg, Joplin, Mo.
Wm. P. Hancock, Arcade Bldg., East St. Louis, Ill.
The leases of Wm. P. Hancock, Col. H. H. Gregg and Lone Oak Mining Companies produced nothing in 1904.

JOHN JACKSON MINING CO. LEASE.

The John Jackson Mining Co. owns and operates a mining lease, covering 59 acres of the John Jackson Investment Co. land, located in the southeast quarter of section 33, township 28, range 33. The company is incorporated under the laws of the state of New Jersey, with a capitalization of \$105,000, and the local management is in the hands of R. H. Corbin of Joplin. This tract of mineral land is in one of the best mining sections in the State. This lease was sold by its original owners to the present company some years since, for \$105,000. Dividends of 60 per cent have frequently been made, and the company has long since covered back its original outlay. The exhibit of the output of ore from the lease is evidence of the richness of the mines and the carefully con-

ducted business of the company. On May 1st the company constructed a tailing mill of 150 tons daily capacity per shift. At the close of the year it had produced 883,280 pounds of zinc ore, which was sold for \$14,896.72. On September 17, the company closed down its mines to prospect for the first time in seven years, and in less than six weeks a new ore body was found, which appears to be equal in richness to the old one. Before this discovery was made, the ground was condemned after inspection by some of the most competent miners, which goes to show how easily a mine might be abandoned if the company in charge did not have the necessary energy and pluck. The company acquired these holdings in the early part of 1898, and since which time the annual productions have been as follows:

Year.	Tons zinc ore.	Tons lead ore.	Total values.
1898.....	2,806	1.66	\$67,848 00
1899.....	2,911½	8.00	101,688 00
1900.....	8,086	8.50	106,440 00
1901.....	2,908	.....	71,002 00
1902.....	2,898½	85.50	98,488 00
1903.....	2,889¾	80.80	92,182 17
1904.....	1,354	8.58	49,726 19
Totals.....	18,808¾	78.04	\$587,814 86

THANKSGIVING LEAD AND ZINC CO. LEASE.

The Thanksgiving Lead and Zinc Co. is a Missouri corporation, capitalized for \$50,000. Arthur Thacher is president of the company; A. B. Cole, vice-president, and L. G. McNair, secretary and treasurer. The company controls 20 acres of mining land, under first lease, owned in fee by the John Jackson Investment Co., the land being located in the northeast quarter of section 18, township 27, range 33. The company is operating two shafts, 80 feet in depth, and its machinery consists of two hand jig plants, including nine hand jigs, two boilers, three steam pumps, two steam hoisters. The product of the lease for the year was 236¼ tons of zinc ore, which was sold for \$8,512.25. The company also sold lead ore mined from the lease for \$246.98. This would make the total amount received from the output of the mine \$8,759.23.

KATYDID MINING CO. LEASE.

The Katydid Mining Co. is incorporated under the laws of Missouri, with an authorized capital stock for \$8,400. The officers of the company are J. P. Tillhof, president, and W. J. Campbell, secretary and treasurer. The company owns a mining lease on about 15 acres of land

in the northwest quarter of section 32, township 28, range 33, the land being owned in fee by the John Jackson Investment Co. The lease is improved with a 100 tons daily capacity concentrating plant, equipped with one boiler, one engine, two steam pumps, two steam jigs, one steam hoister, one crusher. There is one shaft on the lease, 220 feet in depth, and two 40-foot ore faces are worked. The output of mineral from this lease for the year consisted of 528 tons of zinc ore, which was sold for \$18,000.

JOPLIN-KENTUCKY ZINC CO. LEASE.

The Joplin-Kentucky Zinc Co. is incorporated under the laws of Kentucky, and capitalized for \$50,000. The officers of the company are John B. Atkinson, president; Paul M. Moore, secretary and treasurer. The company holds, under first lease, 17 acres of mining land, owned in fee by the John Jackson Investment Co. The improvements upon the lease consist of a 100 tons daily capacity concentrating plant, equipped with one steam boiler, one engine, two steam pumps, three steam jigs, three steam drills, two steam hoisters, one crusher. The company is operating one shaft, 110 feet in depth, and employ an average force of nine miners and five other employes. The lease produced during the year 267½ tons of zinc ore, which was sold for \$9,731.84.

JOHNSON (W. E.) LAND.

This tract of mining land, embracing 100 acres, is located in section 9, township 27, range 33, and is owned in fee by W. E. Johnson of Joplin, Mo. This land is just in its prospecting stage, and the mill upon it is a custom concentrating mill, and handles all ore brought to it by the various prospectors and developers operating leases and sub-leases on the property. None of the shafts are deep enough to reach the best ore levels, but several drill holes have tested the land to a depth of two hundred feet and found ore. The owner of the land is not engaged in mining, and the following parties are developing leases and mining on the land: C. Washburn, R. A. Moore, Jas. Thornton, Soward & Son, Short & Whitney, A. Hoover, John Howard and R. Hoover, and Jackson Armil. The mineral produced from these leases during the year consisted of 530 tons of zinc ore, valued at \$19,729, and 9½ tons of lead ore, valued at \$537, making a total valuation of both ores of \$20,266.00.

R. A. MOORE & CO. LEASE.

R. A. Moore & Co. control 20 acres of the W. E. Johnson land, under *first lease*. This mining company is composed of R. A. Moore, C. W. McAber and O. W. Mathews. The company is working one shaft, 80

feet in depth. Three 15-foot ore faces are being operated, with an average daily force of eight miners, and during the year 146½ tons of zinc ore and 3,700 pounds of lead ore were mined, and sold for \$5,238.

JOHNSON & CO. LEASE.

Johnson & Co. is a partnership company, composed of Chas. Lowrie, T. A. Carter, John Johnson and others. The company is operating a mining lease on 42½ acres of land, owned in fee by W. E. Johnson of Emin, Mo., and located in section 19, township 28, range 33. The product of this lease was 278½ tons of zinc ore, valued at \$11,279.25, and 7¼ tons of lead ore, valued at \$403, making a total valuation for both ores of \$11,682.25.

JONES (L. B.) LAND.

This tract of mining land is owned by L. B. Jones of St. Louis, Mo., and controlled, under first lease, by D. P. Weems & Co. of Neosho, Mo., consists of 10 acres of land, located in the northwest of northwest of section 30, township 27, range 32. The land is sub-leased to Foster McConnell, who is operating one shaft, 140 feet in depth. An average of six miners were employed on the land, and a great portion of the time was consumed in prospecting and improving the mine. There were, however, mined and sold during the year 13 tons of lead ore, which brought the operators \$689.

JONES (RUTH) LAND.

L. J. Stevison and C. R. Jones of Webb City, Mo., hold, under first lease, 40 acres of mining land, owned in fee by Ruth Jones of Kansas City, Mo., and located in the northeast of northwest of section 4, township 27, range 32. Three mining lots of the lease are sub-leased to the following mining companies: Hungry Five Mining Co., Ella R. Mining Co. and the Big Four Mining Co. These companies all have their post-office address at Webb City. This land was unprospected until March 1, 1904, when ore was discovered by drilling. There are now three shafts on the lease, varying in depth from 30 to 80 feet, and six ore faces, 8 by 10 feet, are being worked. There is no concentrating mill on the lease, and the work of cleaning the ore is done with three hand jig plants. The product of this tract was 75 tons of silicate, valued at \$1,173.50, 156½ tons of lead ore, valued at \$8,581.11, and 1½ tons of dry-bone, valued at \$59.20, making a total value for the entire output of mineral of \$9,813.80.

JOPLIN CONSOLIDATED MINING CO. LAND.

The Joplin Consolidated Mining Co. is a Missouri corporation, capitalized for \$50,000. The officers of the company are J. B. Guinn, president; J. F. Wise, vice-president; C. W. Glover, secretary and treasurer. The company owns in fee 160 acres of mining land, controlled under first lease by the Joplin Main Street Mining Co. of Joplin, Mo. The following named companies are operating under sub-lease upon the land: Marshall Mining Co., Boston Mining Co. and Parsons & Co. The product of the lease was 801.6 tons of zinc ore, valued at \$31,073.82, and 133 tons of lead ore, valued at \$6,870.17, the total amount received for both ores being \$37,944. There are four shafts on the lease, varying in depth from 65 to 100 feet, and ore is being produced from eight ore faces, 10 by 20 feet in size. There was considerable prospecting done on this land, the drill proving the existence of an ore body 25 feet below the present working.

JOPLIN MAIN STREET MINING CO. LEASE.

The Joplin Main Street Mining Co. is incorporated under the laws of Missouri and capitalized for \$100,000. G. S. Tarbox is president of the company; M. Hancock, vice-president, and A. T. Bragg, secretary and treasurer. The company owns a first lease on twelve acres of mining land, the fee of which is owned by the Joplin Consolidated Mining Co., and located in the southwest of southwest of section 35, township 28, range 33.

There are two shafts on the lease, sunk to the depth of 90 and 95 feet, respectively. The property is improved with a one hundred tons capacity concentrating mill, equipped with one boiler, one engine, two steam pumps, two steam jigs, two steam hoisters, one crusher. There were mined and sold from this tract 110 tons of zinc ore, which brought the sum of \$5,126.

KANE & REECE LAND.

Big Kate Mining Co. own and operate a lease on four mining acres about four acres of land, the fee of which is owned by E. of Carterville and O. Reece of Webb City, Mo. The company is organized under the laws of Missouri, and capitalized for \$100,000. At the present time the president, Wm. McMillan, having deceased, the vice-



president and secretary, Geo. W. Lawrence and J. W. Layne, sold their interests to J. L. Moore and J. A. McMillan, and when this report was made, new officers for the company were not chosen. The lease is improved with a concentrating mill, equipped with machinery and apparatus for the proper treatment of ore. There are three shafts sunk, 60, 200 and 220 feet, respectively, in depth, and both lead and zinc ores are produced. The product, during a part of the year which the mine was operated, was 328 tons of zinc ore, valued at \$11,906, and 23½ tons of lead ore, valued at \$1,207.80, making a total value for both ores of \$13,114.80.

KELLEY & WARE LAND.

The Majestic Mining Co. of Webb City, Mo., was organized under the laws of Arizona, and capitalized for \$250,000. The company controls, under first lease, 60 acres of mining land, which it operates under the superintendency of S. L. Wilkins. The lease is improved with a concentrating plant, daily capacity 100 tons, and equipped with two boilers, one engine, one steam pump, two steam jigs, one air compressor, four air drills, one steam hoister, one crusher. There is one shaft on the lease, producing both lead and zinc ore, sunk to the depth of 190 feet. The ore body is at a level of 185 feet, and ten ore faces, 10 by 40 feet in size, are being worked. A daily average of 29 miners and six other employes are employed by the company, and the production of the lease was 1,206 tons of zinc ore, valued at \$44,040, and 336½ tons of lead ore, valued at \$18,171, making a total value of both ores of \$62,211.

KELLEY (ALBERT) LAND.

The Osceola Mining Co., with office at Webb City, Mo., holds first lease on 20 acres of mining land, the fee of which is owned by Albert Kelley of New York city. The company is incorporated under the laws of Missouri, with an authorized capital stock of \$48,000. The officers of the company are C. C. Matthews, president; D. F. Matthews, vice-president, and W. W. Naupler, secretary and treasurer. The land is located in the northwest quarter of section 7, township 28, range 32, and the improvements upon the lease consist of a 200 tons daily capacity concentrating plant, equipped with two boilers, one engine, two steam jigs, one steam pump, one air compressor, six air drills, two steam hoisters, one crusher. There is one shaft upon the lease producing ore 171 feet in depth, and the ore lies in a blanket vein, varying from six to nine feet in depth. It occurs between solid rock formations, and only occasional

posts are needed for support of weak places in the roof. During the year from this lease were produced and sold 840 tons of zinc ore, valued at \$27,751, and 759½ tons of lead ore, valued at \$42,137, making a total value for both ores of \$69,888.

KELLER LAND.

The Truesdale Mining Co. controls a mining lease on 34 acres of land, situated in the southeast of southeast of section 9, township 27, range 33, and owned in fee by G. W. Kelley of Joplin, Mo., the property being formerly known as the Haggarty lease. One shaft has been sunk to the depth of 165 feet, in which zinc ore has been developed, and during the year zinc ore to the value of \$13,679 was mined and sold. The greater part of the time was spent in the development of the mine, and only 66 days were spent in the production of ore. The property is improved with a concentrating mill, with daily capacity of 100 tons.

KIRK LAND.

The S. P. Kirk land consists of 12 acres, in the southwest of northwest of section 14, township 27, range 32. Daniel Bragg of Duenweg, Mo., holds first lease on the tract, which is being operated by the following sub-lessees: W. M. Orahod, G. Lamberson and Adam Scott. There are two shafts, 80 feet in depth, producing ore, which is handled and worked with four horse hoisters and two hand jigs. The operators mined and sold 10 tons of lead ore for \$563.

KIRKBRIDE LAND.

J. W. Kirkbride owns and operates 29 acres of land, known as the Kirkbride & Priddy lease. The property is improved with a one hundred and fifty tons capacity concentrating mill, fully equipped with machinery and apparatus. There are two shafts on the land, 153 and 200 feet in depth, and the ore bodies are at a level of 150 feet in each. A daily average of 20 miners are employed, and the product of the tract was 1,041½ tons of zinc ore, valued at \$36,446, and 480 tons of lead ore, valued at \$25,920, making a total value of both ores of \$62,366.

KNIGHT LAND.

ISHPEMING MINING CO. LEASE.

The Ishpeming Mining Co. is incorporated under the laws of West Virginia, with an authorized capital stock for \$200,000. The officers of the company are C. H. Hall, president; W. D. Reece, vice-president; E. Hall, secretary and treasurer, and Jas. Story, superintendent. The company owns and operates a mining lease on 30 acres of land, owned in fee by Augustus Knight, and located in the northeast quarter of section 7, township 28, range 33. The improvements on the lease consist of a concentrating plant, with daily capacity of 100 tons, equipped with two boilers, two engines, one steam pump, two lift pumps, two steam hoisters, two steam jigs, one crusher. There are two shafts on the lease producing ore, 93 and 100 feet in depth, respectively. Considerable time has been spent in prospecting and developing, and during seventy-five days devoted to the production of ore there were mined and sold $263\frac{1}{2}$ tons of zinc ore, valued at \$9,306, and $45\frac{1}{2}$ tons of lead ore, valued at \$2,434, making a total value for the combined product of \$11,740.

KOEHLER, STICKNEY, ASH & LUKE LAND.

LUKE & BROWN AND WADDILL & ASH LEASES.

The Koehler, Stickney, Ash and Luke land consists of 160 acres, located in east $\frac{1}{2}$ of southwest and west $\frac{1}{2}$ of southeast of section 29, township 28, range 32. The land is held under first lease by two companies, Luke & Brown and Waddill & Ash, and operated by the following sub-leases: Long & Co., Waddill & Ash lease; B. M. Bailey & CO., Luke & Brown lease. Both leases are improved with concentrating plants, with adequate equipments for the proper treatment of ore. There is a mine on each lease in which lead and zinc ores have been developed, and the output consisted of 200 tons of zinc ore, valued at \$7,340.50, and $23\frac{3}{4}$ tons of lead ore, valued at \$1,247.25, making a total valuation for both ores of \$8,588.75.

LANYON LAND.

LUKE & BROWN LEASE.

Luke & Brown, No. 3, Mining Co. is incorporated under the laws of Missouri, and capitalized for \$20,000. The officers of the company are Jas. Luke, *president*; J. Brown, *vice-president*, and B. A. Ash, *secretary*

and treasurer. The company owns a mining lease on 40 acres of land, located in the southeast quarter of section 9, township 29, range 32, and owned in fee by R. H. Lanyon of Carthage, Mo. The postoffice address of Luke & Brown is also at Carthage, Mo. The two following companies, Second National Mining Co. and R. H. Lanyon & Co., control, under sub-lease, four acres each of this tract. There is one mine on the property producing ore, with shaft 200 feet in depth, from which was mined and sold 1,008 tons of zinc ore, valued at \$46,390. The greater portion of the year was spent by the sub-lessees in development work. There is one concentrating plant on the lease, with daily capacity of 100 tons, the equipments consisting of three boilers, one engine, two steam pumps, two steam jigs, one steam hoister, one crusher and the other machinery required.

LECKIE LAND.

A partnership company, composed of F. H. Peisen, W. M. Lowe, J. W. King and S. L. Carmody, own and operate a lease on 24 acres of mining land, located in section 7, township 27, range 33, the land being owned in fee by W. M. Leckie of Joplin, Mo. The equipment of the company consists of a boiler and engine, one lift pump, one steam hoister and two hand jigs. The shaft on the lease is 90 feet in depth, and the ore body is at the 85-foot level. Considerable time was spent in prospecting the land, and the output of mineral was only 12 tons of zinc ore and 10½ tons of lead ore, which was sold for \$897.70.

LITTERAL LAND.

E. N. Perry and Jacob Litteral own first lease on 40 acres of mining land, located in the southeast of northwest of section 21, township 28, range 32, the land being owned in fee by Jacob Litteral of Carterville, Mo., and the following companies are operating the land as sub-leases: Charm Mining Co., Argus Mining Co., September Mining Co. and the Quintette Mining Co. There are three concentrating mills on the property, liberally equipped, and the mining shafts on the lease are from 170 to 190 feet in depth. The product from this mining tract was 2,043½ tons of zinc ore, valued at \$67,670.72, and 808 tons of lead ore, valued at \$111,650. The royalties on zinc averages 20 per cent. and on lead 25 per cent.

LONGON (MARTHA E.) LAND.

EDGAR COUNTY MINING CO. LEASE.

The Edgar County Prospecting and Mining Co. is incorporated under the laws of Illinois, and capitalized for \$5,000. The officers of the company are Geo. W. Myers, president; Miss Lucy Bishop, secretary; Jas. W. Cryder, treasurer, and Bruce Sims, manager. The company owns first lease on 30 acres of mining land, located in section 36, township 28, range 34, the land being owned in fee by Martha E. Longon of Joplin, Mo. The company sub-leased small mining tracts, varying from 4 to 7 acres, to the following companies: Lucky Three Mining Co., Mocking Bird, Blue Cat, Emma and P. C. Campbell & Co. There is but one concentrating mill on the property, and three mines producing ore, and the output from the lease was 1,130 tons of zinc ore and $7\frac{1}{4}$ tons of lead, all of which sold for \$41,514. The Emma mine and the Lucky Three mine produced the bulk of the ore reported.

LUSCOMBE (T. T.) LAND.

This mining tract consists of 36 acres, located in the northeast of southeast of section 17, township 28, range 32, and owned in fee by T. T. Luscombe of Carterville, Mo. The land is held under first lease by Jarred, Templeton et al., and portions of it sub-leased to the following mining companies: Osage Mining Co., about six acres; Fullerton Mining Co., eight mining lots. The sub-lessees are operating their respective holdings, each with a concentrating mill of 100 tons daily capacity, and adequately equipped for the proper treatment of ore. The shafts on both tracts are at depth of 160 feet, with ore bodies at the same depth, and the product was 2,516 tons of zinc ore, valued at \$91,561, and 107 tons of lead ore, valued at \$6,015, making a total value of both ores of \$97,576.

FULLERTON MINING CO.

This company has a sub-lease on eight acres of the Luscombe land. It mined 1,293 tons of zinc and 68 tons of lead ores, the total value being \$47,015. Further details may be gathered from the table of Jasper county.

OSAGE MINING CO. LEASE.

The Osage Mining Co., composed of J. A. Hardy, Geo. Hardy, J. A. Hardy, Jr., and the Federated Mines and Milling Co. of N. J., under

sub-lease from Jarred, Templeton et al., operate six mining lots, located in the Luscombe addition to Carterville, Mo. The company is working one mine, the shaft of which is 160 feet in depth, and four 20-foot ore faces are the sources of production. The ore body is at the 160-foot level, and the equipment consists of a one hundred tons daily capacity concentrating mill, with boiler and engine, two steam pumps, two steam hoisters, two steam jigs, one crusher, one Wilfley table. The product of the lease was 1,223 tons of zinc ore, valued at \$44,799, and 77,780 pounds of lead ore, valued at \$2,216, making a total value of both ores of \$47,799.

McGREGOR (M. G.) LAND.

This mining tract, consisting of eight acres, located in the southwest of southwest of section 21, township 28, range 32, is controlled, under first lease, by C. B. Gammon of Carthage, Mo., and sub-leased to the American Zinc, Lead and Smelting Co., the latter operating the land. The lease is improved with a concentrating mill of 100 tons daily capacity, equipped with boiler, engine, steam pump, two steam jigs, one air compressor, three air drills, one steam hoister, one crusher. The company employs 26 men, 18 of whom are miners and 8 are top men. Ore is produced from one shaft, and the output of the year was 562 tons of zinc ore, valued at \$20,123.50, and 33 tons of lead ore, valued at \$1,755.60, making a total value for both ores of \$21,879.

McANTIRE, BAILEY AND OTHERS' LAND.

LIVERPOOL MINING CO. LEASE.

The Liverpool Mining Co. is a partnership company, composed of B. H. Garrigues, Cheath Bros., T. Bowly, Maddox Bros., C. Bahr, Barratt Bros. and R. A. Kantenwine. The company owns and operates a lease on 10 acres of mining land, the fee of which is owned by W. B. McAntire, John Bailey and others of Joplin and Carthage, Mo. The postoffice address of the Liverpool company is at Webb City. During the year the company mined and sold 825 tons of zinc ore, valued at \$28,050, and 22½ tons of lead ore, valued at \$1,280, the total amount received for both ores being \$29,330. The improvements on the lease consist of an 80 tons daily capacity concentrating mill, equipped with two boilers, one engine, one steam pump, three steam jigs, two steam hoisters, one crusher. The company employs 14 miners and 8 other employes. The employes receive from \$2.25 to \$3.50 per day.

MASTIN-HAZELTON. LAND.

BRADFORD-KANSAS CITY MINING CO.

The Bradford-Kansas City Mining Co. is incorporated under the laws of Missouri, with an authorized capital stock of \$10,000. The officers of the company are F. P. Hazelton, president; D. B. Scully, vice-president; T. H. Mastin, Jr., secretary and treasurer. The company owns and operates a lease on 40 acres of land, located in the northwest of northwest of section 17, township 28, range 32, the land being owned in fee by Thos. H. Mastin, Jr., and Clarissa F. Hazelton, both of Kansas City, Mo. The company was engaged in mining with a force of 25 miners, and produced from the lease 1,161 tons of zinc ore, valued at \$44,063.53, and 141 tons of lead ore, valued at \$7,094.78, making a total for both ores of \$51,158.

MITCHELL (S. D.) LAND.

HOOSIER MINING CO. LEASE.

The Hoosier Mining Co., with postoffice address at Joplin, Mo., is a Missouri corporation, capitalized at \$50,000. Its officers are H. H. Roembes, president; W. B. Bash, secretary and treasurer. The company acquired a lease formerly owned by the Utility Mining Co. on four mining lots, located in the southwest quarter of section 18, township 28, range 33, the land being owned in fee by S. D. Mitchell of Carthage, Mo. The property is improved with a concentrating mill, equipped with two boilers, one engine, one steam pump, two steam jigs, one steam hoister, one crusher. The company in control is operating a mine, the shaft of which is 110 feet in depth. Two ore faces are being worked, with a force of 20 men, and the product mined and sold was 169 tons of zinc ore, valued at \$6,463, and 21½ tons of lead ore, valued at \$1,231, making a total amount received for both ores of \$7,694.

BIG SIX DEVELOPMENT CO.

This tract of mining land is located in northeast quarter of section 4, township 27, range 32, and contains 120 acres, the fee of which is owned by S. D. Mitchell of Carthage, Mo. The Big Six Development Co., composed of J. W. Allen of Joplin, S. A. Stuckey of Carthage, J. A. Campbell of Kansas City, and W. R. Turner of Philadelphia, Pa., own first lease on the land, and the following sub-lessees are operating the property: Fairview Mining Co. controls six acres, Jupiter M.

Co. four acres and S. D. Mitchell four acres. There are three concentrating plants on the lease, with daily capacity of 100 tons. Their equipments consist of seven boilers, three engines, three sets steam jigs—two jigs in each mill—eight steam hoisters, four steam pumps, three crushers and other machinery required in handling and treating ore. This property has been a good producer in the past. The following report of product for 1904 is from the S. D. Mitchell mine: 865½ tons of zinc ore, valued at \$33,041, and 27½ tons of lead ore, valued at \$1,490, making the total received for both ores of \$34,531.

The owner of this property, objecting to the manner in which the underground work of the mines was being conducted, brought suit and ousted the lessees on account of the reckless way in which they had conducted the work. Since, the Supreme Court has sustained the lower court wherein it made void the leases on this property. Lessees should take warning and avoid cutting up ground any old way in order to get out the ore without the necessary precaution and provision for the future working of the ground. This mining land has been very fine, but the lessees, in a short-sighted, greedy way, have killed the goose that laid the golden egg, and also forfeited their mining lease upon the land.

MISSOURI LEAD AND ZINC CO. LAND.

The Missouri Lead and Zinc Co., with postoffice address at Joplin, Mo., is a Missouri corporation, capitalized at \$3,000,000. James Campbell is president of the company and W. F. Reed, secretary. The company owns in fee 1,200 acres of land, located in sections 11, 12, 13 and 14, township 27, range 33. The president and secretary of the company are residents of St. Louis, Mo., and H. R. Conklin of Joplin is superintendent. This company is one of the large corporations operating in southwest Missouri, and while it is not engaged in active mining, it provides every aid and convenience possible for its lessees. A custom concentrating mill is operated, the daily capacity of which is 300 tons, and its equipment embraces machinery of the most modern type. The output of ore from all leases on the company's land was 1,706 tons of zinc ore, valued at \$61,912.55, 306 tons of silicate, valued at \$4,533, 1,421 tons of lead ore, valued at \$78,599.45, and 1½ tons of dry-bone, valued at \$42, making a total valuation for the aggregated product of \$145,087.00.

MISSOURI ZINC FIELDS CO.

This is one of the strong companies of Jasper county, having produced during the year 6,866,170 pounds of zinc ore and 824,310 pounds of lead ore. Nothing so conduces to our confidence in this excel-

lent company than does the clean, comprehensive and satisfactory report it makes of every detail connected with its operations. The detailed statement following was freely furnished this Bureau by this company, and we are thankful for the pains-taking care exercised by it in this matter, believing that if all data furnished this office was arranged after the same careful manner as exhibited in the report of this company, that statistics would prove to be of far more value than they are.

The Missouri Zinc Field Co. owns in fee 440 acres of mineral land, and is incorporated under the laws of the state of Maine. Its officers, resident in Missouri, are Frank Nicholson, consulting engineer, at Joplin, and W. R. Crandall, superintendent; box 252, Webb City.

Machinery Equipment of the Company.—The company maintains and operates a pumping and power station, which is located on mining lot 31, and operates a pump 24 hours per day for the drainage of the ground, the flow of water being from 1,200 to 1,500 gallons per minute.

Plant Equipment consists of—

- 2 Sterling water tube boilers, 250 horse power each.
- 2 14x42-inch Allis Chalmers Corliss engines, non-condensing.
- 2 120 kw., 440 volt, 60 cycle, Westinghouse alternators.
- 1 12x24x12x24-inch Prescott compound condensing steam pump.
- 2 16-inch by 6 feet Cornish force pumps, belted to engines.
- 1 7½-horse power electric motor, operating hoist at pump shaft.
- 1 7½-horse power electric motor, operating 5¼x8-inch triplex pump.
- 1 3-horse power electric motor, operating 4¾x24-inch deep well pump.

Electric power is furnished from the plant to operate—

The Mary Mouise mill, on lot 279, using 1 75-horse power and 2 10-horse power motors.

Nymo mill, on "Aylor 40," Webb City, using 1 50-horse power and 2 15-horse power motors.

Kamper Sludge mill, using 1 7½-horse power motor.

4 7½-horse power motors operating hoists for sundry lessees.

The Evans & Smith custom mill and the Scioto mill are lighted from the plant.

REPORT OF ORE SALES—MISSOURI ZINC FIELDS COMPANY.
FOR THE YEAR ENDING DECEMBER 31, 1904—INDIVIDUAL PRODUCTION.

Produced by.	Term operating.	No. of lot....	Lead ore, lbs.	Value.....	Average price per 1,000 lbs ..	Zinc ore, lbs.	Value.....	Average price per ton....	Total value...
Tibbins & Co.	Jan. 1 to Feb. 18.....	8	10,180	\$238 26	\$27 83	21,300	\$288 26	\$21 06	\$257 51
Gregg & Co.	Feb. 18 to Mch. 14.....	8	2,940	81 00	27 79	21,000	147 17	26 12	226 85
H. Hughes.	Dec. 1 to Dec. 24.....	8	70	2 06	29 00		66 07	16 30	209 85
A. W. Broom & Co.	June 1 to Sept. 30.....	4	8,080	248 78	25 40	47,100	761 41	163 24	2,696 42
Clark & Co.	Jan. 1 to Dec. 31.....	6-6	101,680	2,777 01	27 36	101,180	1,834 48	26 13	1,647 69
O'Neal & Co.	Mch. 1 to June 14.....	7	770	38 21	30 00	39,410	704 43	26 02	704 55
Clark-Evans & Co.	Oct. 1 to Oct. 23.....	7	400	10 40	26 00	57,630	1,179 10	40 70	1,189 50
Elliott & Co.	Oct. 23 to Dec. 31.....	7				15,000	315 69	39 00	815 69
Tibbins & Co.	Dec. 3 to Dec. 31.....	7	24,000	653 96	26 18	847,660	5,137 96	31 90	6,180 96
Evans & Smith.	Jan. 1 to Dec. 31.....	11	33,760	928 21	27 18	248,480	3,281 96	26 09	4,210 96
Lansaw & Co.	Jan. 1 to Dec. 31.....	12	55,700	1,516 27	27 55	48,800	321 68	14 06	1,837 96
Anderson & Co.	Jan. 1 to July 9.....	14-69	24,760	664 69	26 44	80,850	298 06	19 64	961 37
Collier & Co.	July 9 to Dec. 31.....	14-69	44,500	1,271 06	28 56	41,800	500 00	25 08	1,861 06
Monroe & Co.	Jan. 1 to Apr. 21.....	16	39,820	1,029 44	26 06	46,040	618 00	36 03	1,643 44
John Ruhl.	Apr. 21 to Sept. 24.....	16	19,180	661 30	29 38	18,120	314 00	24 52	875 38
Cane & Co.	Nov. 12 to Dec. 31.....	17	490	12 36	26 40	6,000	84 88	29 92	106 78
Blue Bell Mining Co.	Jan. 1 to July 31.....	22	800	21 40	26 76	29,360	261 60	17 80	2,651 96
Chilids & Co.	Jan. 26 to Aug. 31.....	22	90,380	2,390 45	26 47	10,030	166 66	30 84	174 00
The April Mine.	Mch. 1 to Aug. 31.....	23-80	480	10 76	26 00	240,640	8,908 91	31 92	3,967 38
Handy & Chase.	Oct. 15 to Oct. 31.....	25	2,180	60 35	29 48	19,700	366 22	30 00	3,893 23
Duluth Zinc Co.	Jan. 1 to Apr. 16.....	26				12,300	170 53	27 58	1,078 57
C. T. Orr.	Aug. 15 to Aug. 31.....	26	82,000	908 06	27 66	91,830	1,901 62	41 94	1,901 62
Viola Anderson.	Oct. 1 to Dec. 31.....	28				1,651,430	30,416 63	39 84	81,824 36
Howard Reay & Co.	Nov. 1 to Dec. 31.....	44	83,780	917 69	29 09	82,900	267 56	22 69	496 84
Scioto Zinc Co.	Jan. 1 to Dec. 31.....	46	4,010	112 67	29 76	425,360	6,939 70	32 48	6,939 70
Edwards & Co.	Jan. 1 to Feb. 6.....	47	2,410	66 39		10,300	175 32	34 39	176 32
W. R. White & Co.	Mch. 1 to Mch. 30.....	47				29,210	619 30	42 40	619 30
Jewel O. Mining Co.	Jan. 1 to Apr. 30.....	49-57				2,770	22 29	16 10	36 92
Glen & Scafe.	Oct. 1 to Oct. 31.....	49				26,770	697 61	37 94	708 69
A. W. Broom & Co.	Nov. 1 to Dec. 31.....	99	580	18 64	26 76	1,600	16 00	20 00	46 68
Byers & Co.	Jan. 1 to Jan. 18.....	109	570	9 36	26 00	880	17 48	42 30	48 81
Monroe Bros.	Aug. 1 to Dec. 10.....	187	1,880	38 62	25 28				
Johnson & Co.	June 1 to July 30.....	187							
Workley & Co.	Dec. 1 to Dec. 31.....	187	1,080	30 90	30 00				

Company	Period	Days	Value of zinc ore	Value of lead ore	Value of silver ore	Value of copper ore	Value of other minerals	Total
Adair & Co.	Jan. 1 to July 9	200	35,045	716 04	37 49	132,130	1,025 00	37 03
Adair & Co.	1 to Feb. 20	378	5,490	156 08	38 47	22,880	915 00	37 03
Adair & Co.	1 to Dec. 31	378	24,130	979 82	38 70	37,950	791 14	38 53
Adair & Co.	1 to Feb. 6	279	8,050	185 08	37 73	74,890	1,322 96	38 53
Adair & Co.	6 to Aug. 13	379	9,230	269 36	36 03	268,530	4,250 30	36 00
Adair & Co.	13 to Dec. 31	379	32,740	1,002 15	36 00	478,210	9,500 05	39 04
Adair & Co.	1 to Feb. 19	380	970	37 81	36 50	8,300	114 02	37 90
Adair & Co.	1 to Feb. 6	347	8,340	174 55	37 83	220,000	3,038 00	37 83
Adair & Co.	1 to Nov. 13	347	5,050	131 30	36 00	220,000	3,038 00	37 83
Adair & Co.	1 to July 3	380	17,140	448 40	36 16	2,440	35 84	36 03
Adair & Co.	1 to Jan. 23	387	1,930	68 18	36 23	67,940	1,032 10	36 23
Adair & Co.	1 to Dec. 31	380-402	25,000	970 45	37 45	2,100	30 97	39 40
Adair & Co.	1 to June 4	406	19,070	534 84	36 08	2,100	30 97	39 40
Adair & Co.	1 to Aug. 12	406	6,480	155 05	36 53	2,100	30 97	39 40
Adair & Co.	1 to Dec. 31	458	16,630	450 08	37 24	2,100	30 97	39 40
Adair & Co.	1 to May 31	451	7,470	304 53	37 33	2,100	30 97	39 40
Adair & Co.	1 to June 1	451	6,230	169 53	37 26	2,100	30 97	39 40
Adair & Co.	8 to July 10	33	18,850	483 33	36 23	2,100	30 97	39 40
Adair & Co.	1 to Dec. 31	33	30,650	543 09	36 26	2,100	30 97	39 40
Adair & Co.	1 to Dec. 31	33	30,650	543 09	36 26	2,100	30 97	39 40
Totals			534,810	323,800 19	327 15	6,805,170	112,323 23	38 73
Value of zinc ore, \$112,323.23.								
Value of lead ore, \$327,150.19.								

DETAIL OF EQUIPMENT OF LESSEES ON MISSOURI ZINC FIELDS.

FOR THE YEAR ENDING DECEMBER 31, 1904.

	No Lots	Con. Mills	Hd. Jigs	Boilers...	Compress	S Pumps	A Drills	S. Holsts.	E. Holsts.	H. Holsts	W Tables...	Av. Miners..	Av. Wage ..	Av. Top. ..	Av. Wage...	Days Op....	
Tibblins	22	+						1				\$5	00	1	00	35	Prospecting
Gregg	2	+						1				\$5	00	1	00	14	One-half prospect
Hughes	2	+										\$5	00	1	00	14	
Brown	2	+										\$5	00	1	00	14	
Clark	2	+										\$5	00	1	00	14	
O'Neal	2	+										\$5	00	1	00	14	
Clark-E.	2	+										\$5	00	1	00	14	
Elliot	2	+										\$5	00	1	00	14	
Tibblins	2	+										\$5	00	1	00	14	
Evans & S	2	+										\$5	00	1	00	14	
Lansaw	2	+										\$5	00	1	00	14	
Anderson	2	+										\$5	00	1	00	14	
Collier	2	+										\$5	00	1	00	14	
Monroe	2	+										\$5	00	1	00	14	
Ruhl	2	+										\$5	00	1	00	14	
Case	2	+										\$5	00	1	00	14	
Blue Bell	2	+										\$5	00	1	00	14	
Ohlids	2	+										\$5	00	1	00	14	
April Mine	2	+										\$5	00	1	00	14	
Handy & Co.	2	+										\$5	00	1	00	14	
Duluth	2	+										\$5	00	1	00	14	
C. T. Orr	2	+										\$5	00	1	00	14	
Anderson	2	+										\$5	00	1	00	14	
Geary & Co	2	+										\$5	00	1	00	14	
Edwards	2	+										\$5	00	1	00	14	
White & Co.	2	+										\$5	00	1	00	14	
Jewel	2	+										\$5	00	1	00	14	
Jenn	2	+										\$5	00	1	00	14	
Brown	2	+										\$5	00	1	00	14	
Johnson	2	+										\$5	00	1	00	14	
Worley	2	+										\$5	00	1	00	14	
Walton	2	+										\$5	00	1	00	14	
Luere	2	+										\$5	00	1	00	14	
Brown (S)	2	+										\$5	00	1	00	14	
Greene	2	+										\$5	00	1	00	14	
Wright	2	+										\$5	00	1	00	14	
Lucky 6.	2	+										\$5	00	1	00	14	

Owner	Acres	Value	Notes
Ball	1	1.00	Built mill.
B. & O'D.	10	1.50	Built mill.
Crystal	8	1.00	Built mill.
Coyne	15	2.50	Prospecting.
Mary-Lou	15	2.50	Prospecting.
Miner	8	1.00	Building mill.
Wearing	8	2.50	Reported by O. T. Orr.
Wise-Guy	15	2.50	Prospecting.
South 40	15	2.50	One-half prospect.
Spencer	4	2.50	Two-thirds prospect.
Bell & Co.	2	1.00	Prospecting.
Judy	1	1.00	(Lot 8) operated as custom mill.
Walton	1	1.00	(Lot 28) sludge mill.
Harrington	1	1.00	
Pillquist	1	1.00	
Evans & S.	1	1.00	
Kemper	1	1.00	

+ Cleaned their dirt on custom mill

Standard steam mill, 14-inch crusher, etc

E Standard Mill with electric motor drive.

E Wilney Table Sludge Mill with electric motor drive.

Co. Co-operative companies, did their own work and kept no pay roll.

SUMMARY OF PRODUCTION MISSOURI ZINC FIELDS CO.

For the year ending December 31, 1904.

1904.	Lead.	Value.	Av.	Zinc.	Value.	Av.	Total
January.....	90,580	\$2,498 51	\$27 52	544,710	\$8,027 28	\$29 47	\$10,525 79
February.....	42,810	1,185 41	28 25	642,280	8,552 04	26 70	9,737 45
March.....	91,040	2,509 71	28 54	812,240	11,252 28	27 70	13,761 99
April.....	68,870	1,838 11	28 70	551,810	8,821 76	29 19	10,659 87
May.....	66,270	1,784 02	26 56	550,880	8,059 25	29 04	9,843 27
June.....	98,020	2,490 28	25 40	405,840	5,221 12	25 76	7,711 40
Total.....	451,140	\$12,856 04	\$27 25	3,506,240	\$49,498 75	\$28 25	\$62,354 79
July.....	51,170	\$1,853 46	\$36 05	417,830	\$6,697 26	\$32 04	\$8,550 72
August.....	76,640	1,954 61	25 22	600,710	10,465 76	34 84	12,420 37
September.....	58,430	1,415 04	26 10	668,720	12,842 57	36 91	14,257 61
October.....	51,270	1,356 82	26 46	560,080	10,684 28	37 97	12,041 09
November.....	73,230	2,027 85	27 69	596,080	12,150 44	40 77	14,178 31
December.....	66,830	1,906 82	29 85	516,620	10,548 21	40 88	12,454 03
Total.....	373,170	\$10,057 15	26 70	3,359,980	\$62,838 47	\$37 41	\$72,895 62
Year.....	824,310	\$22,913 19	\$27 15	6,866,170	\$112,337 22	\$32 72	\$135,250 41

MOODY, CAMPBELL & McCLELLAND LAND.

TOP RUN MINING CO. LEASE.

The Top Run Mining Co., composed of Smith & Shipman of Joplin, Mo., own and operate a lease on 3½ acres of mining land, located in section 10, township 27, range 33, the tract being owned in fee by Messrs. Moody, Campbell & McClelland, of 2407 East 12th street, Kansas City, Mo. There is one shaft on the lease, 140 feet in depth, exposing ore bodies at 60, 80 and 125-foot levels. Three ore faces, 10 by 20 feet, are worked, and the equipments consist of one horse hoister and two hand jigs. During the year the lessees mined and sold 50 tons of zinc ore and five tons of lead ore, receiving for same \$2,360.

MONTGOMERY LEAD AND ZINC CO.

The Montgomery Lead and Zinc Co. is incorporated under the laws of Missouri for \$90,000, and A. K. Lorah is secretary and treasurer. The company owns in fee 200 acres of land, situated two miles northwest of Joplin, in township 28, range 33. The company does a leasing business, and the following companies and individuals hold first leases on divisions of the land: Clinton Mining Co., Roach & Dauman, Charles Glover and Jim Rader. Clinton Mining Co. sub-leased 12 mining lots of its holdings to the following parties: Rader, 1 lot; Tounies, 6 lots; Hill & Yarbush, 1 lot; Elledge, 1 lot, and Butrun, 1 lot. There are

1 mines on the land and one concentrating plant, with daily capacity of 10 tons. The shafts on the leases are from 40 to 90 feet in depth, exposing ore bodies 8 by 20 feet. The product from the land was 788 tons of zinc ore, valued at \$27,600, and 12½ tons of lead ore, valued at \$675, making a total value of \$28,275.

MISSOURI TRUST CO., TRUSTEE.

HARRISON MINING CO. LAND.

The Harrison Mining Co. own the fee of 32 acres of mining land, held in trust by the Missouri Trust Co. of St. Louis. The property is located in section 30, township 28, range 33, and is operated by the Harrison Mining Co. The company devoted much time to exploring the area of the ore body with the drill. Prospecting was begun in March, and in April the enlargement of the power plant and jig house was begun and completed about June first. To reach the ore body it was necessary to drive a drift from the bottom of the shaft—150 feet in depth—125 feet northward. This work was completed and the work of production of ore begun about the middle of July. In addition to the work mentioned various drifts have been driven in the ore body aggregating 250 feet in length. The drifts disclose the roof of the ore deposit, but not the floor. A new shaft was begun near the close of the year, which will reach the bottom of the deposit, and arrangements were being made to erect a new mill on the property. The product was 95½ tons of zinc ore and 6 tons of lead ore, which were sold for \$4,506. B. H. Dye of Joplin is superintendent for the company.

MOSSBACK MINING CO. LAND.

ROB ROY MINING CO. LEASE.

The Rob Roy Mining Co., postoffice address, Joplin, Mo., is incorporated under the laws of Missouri, and capitalized for \$15,000. The officers are Burt W. Lyon, president; M. J. Lyon, secretary; J. H. Spencer, treasurer. The company controls, under first lease, 80 acres of mining land, located in the northeast of southeast and southeast of northeast of section 13, township 27, range 33, the land being owned in fee by the Mossback Mining Co. of Joplin, Mo. The Rob Roy company is not engaged in active mining and the only work on its lease was done by the scrappers, who paid a royalty of 20 per cent on zinc and 25 per cent on lead. They produced 487 tons of silicate and 13 tons of dry-bone, which were sold for \$8,392.

MUNCIE LAND AND MINING CO.

The Muncie Land and Mining Co. is a Missouri corporation, capitalized for \$80,000. Its officers are Thos. Morgan, president; J. E. Stillwell, secretary and treasurer. The postoffice address of the company is at Joplin, Mo. This company owns in fee 19 acres of land, located in section 12, township 34, range 32, 10 acres of which is controlled under lease by S. A. Smith and J. Myers of Joplin. There is but one mine reported on the property, the shaft of which is 104 feet in depth. The work on the land was largely in the nature of prospecting and developing, and 68 tons of zinc ore was the output by the lessees, for which they received \$2,833.47.

H. MUSSELMAN LAND.

RELIANCE MINING CO. LEASE.

The Reliance Mining Co. of Webb City is incorporated under the laws of Missouri, and capitalized for \$300,000. The officers of the company are F. E. Rogers, president; Chas. Moore, secretary; L. J. Stevison, general manager. The company owns a mining lease on 40 acres of land, the fee of which is owned by H. Musselman of Joplin, Mo., the land being located in the west $\frac{1}{2}$ of northwest of southeast and east $\frac{1}{2}$ of northeast of southwest of section 4, township 27, range 32. The lessee is operating the land, and its improvements consist of a one hundred tons capacity concentrating mill, equipped with two boilers, one engine, one pump, two steam jigs, one steam hoister, one crusher. There is one shaft on the lease 135 feet in depth, and ore is produced from 2 ore faces, 20 feet in depth. The company produced and sold 715 tons of zinc ore and $\frac{1}{2}$ ton of lead ore for \$28,294. This property was not prospected with drill until December, 1903, after which shaft was sunk and mill erected the following spring. The company operating the land was not incorporated until September, 1904.

MURPHY AND CONNOR LAND.

GALENCI MINING CO. LEASE.

The Galenci Mining Co. is a Missouri corporation, capitalized for \$100,000, and James L. Hamill is treasurer of the company. The company owns and operates a lease on 7 acres of land in the northwest of

in the northwest of section 3, township 27, range 33, the fee of which is owned by Murphy & Connor of Joplin, Mo. The mine operated by the company has been known as the Prairie Chicken, the shaft of which is 190 feet in depth. Four ore faces, 40 by 20 feet, are worked, and the improvements embrace a concentrating plant, equipped with two boilers, one engine, two pumps, two steam jigs, one air compressor, two air drills, one steam hoister and one crusher. Sixteen miners are employed, and eight top and mill men, at an average scale of wages of \$2.25 per day. Considerable work was done in developing the mine, and the product reported was 1,545 tons of zinc ore, which was sold for \$6,397.

IRISH MINING CO. LEASE.

The Irish Mining Co. is incorporated under the laws of Missouri for \$48,000. The company owns and operates a lease on five acres of mining land, just west of Joplin, the fee of which is owned by Murphy & Connor of Joplin, Mo. The improvements on the lease consist of a one hundred tons daily capacity concentrating mill, equipped with two boilers, engine, steam pump, three steam jigs, one steam hoister, one crusher. One mine on the lease is producing ore from three ore faces, 8 by 60 feet in size. Six miners are employed, and the product, consisting of 200 tons of zinc ore, was sold for \$9,000. The royalty paid by the operators to the owners of the land was 20 per cent.

BUSY B. MINING CO. LEASE.

The Busy B. Mining Co. is a partnership company, composed of R. S. Jeffries, W. F. Branham, Frank D. Jones and Chas. W. McAdee. The company owns a mining lease on 20 acres of land, in section 27, township 28, range 33, the land being owned in fee by Murphy & Connor of Joplin, Mo. The postoffice address of the company is at Joplin, Mo., and the following sub-lessees operate the land: Halden & Co., Busy Bee and Blue Pigeon Co. The equipment on the land consists of three hand jig plants, two boilers, two steam pumps, two steam hoisters and one horse hoister. The shafts are 80, 90 and 92 feet in depth, respectively. The ore faces are small, being 6 by 8 feet and 10 by 12 feet. The product of the property was 164 tons of zinc ore and 14½ tons of lead ore, which were sold for \$7,934.

SULTANA MINING CO. LEASE.

The Sultana Mining Co. is a Missouri corporation, capitalized for \$32,000, and A. J. Baker of Joplin, Mo., is manager for the company. The company owns and operates a lease on 10 acres of mining land, &

fee of which is owned by Murphy & Connor of Joplin, Mo. Two mines on the lease are producing ore, the shafts of which are 180 and 190 feet in depth. The company has a concentrating mill with daily capacity of 100 tons, and equipped with two boilers, engine, three steam pumps, two steam jigs, two steam hoisters and one crusher. A daily average of 12 men are employed by the company, ten of whom are miners. The product of the lease was 500 tons of zinc ore, which was sold for \$19,000. The lessee pays 20 per cent royalty to the owners of the land.

MURPHY HEIRS' LAND.

CLYMER & CO., SUB-LEASE.

Clymer & Co., is a partnership, composed of A. Clymer, Abner Cunningham and Susan Howe. The company controls and operates a sub-lease on four mining lots under Howard Murphy, first lessee, the land being owned in fee by the Murphy heirs. Clymer & Co. have postoffice address at Joplin, Mo. The equipment of the company embraces a hand jig plant, containing three hand jigs, one boiler, steam pump and steam hoister. The output of the mine was 25 tons of zinc ore, which was sold for \$887.

NORTON LAND.

DINKELBIHLER LEASE.

This lease embraces 260 acres of land located in sections 8, 10, 15, 17 and 13, in township 27, ranges 32 and 33, and owned in fee by the following parties: G. W. Norton, 120 acres; H. E. Norton, 80 acres, and J. L. Briggs, 60 acres. The original lessees are as follows: Anderson & Dinkelbihler, 40 acres; Read & Dinkelbihler, 80 acres; John G. Dinkelbihler, 140 acres. The following sub-lessees are operating the land: The Par Value Mining Co., W. L. Aaron & Co., The Carnegie Galena Co., The Ivanhoe Mining Co., Germania Mining Co., Louis Gust & Co., Dead Broke Mining Co., The Frederick Rogers & Co. and the Jewell Mining Co. The Ivanhoe, Par Value and the Germania mining companies were engaged mostly in sinking deeper shafts in order to reach the heavier ore runs. The Carnegie Galena mine was purchased near the close of the year by capitalists from Cincinnati, Ohio, who will inaugurate larger and better facilities for mining. This mine was shut down since the accidental death of D. A. Hoover, which occurred March 17, 1904, by the breaking of a cable, and his falling down the shaft. The property produced 360 tons of zinc ore, valued at \$13,530; 185 tons of silicate, valued at \$2,975, and 282 tons of lead ore, valued at \$16,400, making a total value for the three products of \$32,905.

AUDRAIN MINING CO. LEASE.

The Boqua Mining Co. is a partnership company, composed of Anderson, Tamblyn, Brown and others of Joplin and Carthage, Mo. The company owns a lease on 70 acres of land in the northwest of section 4, township 27, range 33, the land being owned in fee by Judge E. H. Norton of Platte City, Mo. Ten lots of the tract is sub-leased to the Audrain Mining Co., which is operating its lease. The improvements on the land consist of two concentrating mills with daily capacity of 75 tons each, and the equipments are three boilers, two engines, two steam pumps, two steam jigs, three steam drills, two steam hoisters and two crushers. There are two mines on the property, the shafts of which are 200 feet in depth. During the year 300 tons of zinc ore was produced, which was sold for \$11,100.

O'KEEFE LAND.

MASSASSOIT LEAD AND ZINC CO. LEASE.

The Massassoit Lead and Zinc Co. is incorporated under the laws of Rhode Island and capitalized for \$300,000. John C. Hebden is president of the company, and J. H. Hambly, secretary and treasurer. The company owns a lease of 84 acres of mining land located in the northwest of section 14, township 27, range 33, the land being owned in fee by E. O'Keefe of Carthage, Mo. The land is operated by the following sub-lessees: W. S. Brown, Sherman Grattis, Geo. H. Ritter, Julius Kirn, J. D. Coates, John DeWitt, Mathew Coyle, Henry Milan, Geo. Shaffer and E. O. Bartlett. Each of the sub-lessees hold from two to four mining lots and they treat their ores with hand jigs, as there is no concentrating mill on the property. The product of the lease was 407 tons of zinc ore, valued at \$14,049, and 207 tons of lead ore, valued at \$11,488, making a total value for both ores of \$25,537. The royalty paid the land owner is 10 per cent, and the first lessees receive 20 per cent from the operators.

HOLDEN & OTHERS, FIRST LEASE.

This tract of mining land, located in the northwest of southeast of section 13, township 28, range 34, is owned in fee by E. O'Keefe of Carthage, Mo., and held under first lease by L. E. Holden and others of Joplin, Mo. A sub-lease on six mining lots of the tract is controlled *and operated by* W. J. Kerns, W. L. Danna and Ed. Chapman of Webb

City. There is one shaft on the lease 75 feet in depth, and the mining equipments consist of two hand jigs, boiler, engine and lift pump. The product was 12 tons of zinc ore and one-half ton of lead ore, which sold for \$535.

OLD COLONY ZINC AND SMELTING CO.

The Old Colony Zinc and Smelting Co. is a corporation, with Col. Albert Clark of Boston, Massachusetts, president. The company owns the fee of 27 acres of mining land about five miles northeast of Joplin. This tract is known as the Porto Rico tract, and is operated by the company. There is one shaft, 170 feet in depth, in which both lead and zinc ores have been developed, and from which there have been produced and sold during the year 648 tons of zinc ore, valued at \$24,939.59, and 78 tons of lead ore, valued at \$3,869.55, making a total value for the two ores of \$28,809.14. The improvements on the tract consist of a complete concentrating plant of 100 tons daily capacity, equipped with two steam boilers, one engine, one steam pump, two steam hoisters, one crusher, two steam jigs and such other machinery and apparatus as is necessary to a plant properly equipped for treating ore.

OWENSBORO-JOPLIN MINING CO.

The Owensboro-Joplin Mining Co. is a Missouri corporation, capitalized for \$100,000. The officers of the company are J. M. McCulloch, president; Frank Ebeller, vice-president; G. Weymann, secretary and treasurer. The company owns in fee 40 acres of mining land, located in the northwest of southeast of section 6, township 27, range 32, and the following lessees are operating the land: 4th of July Mining Co., 4½ lots, and Frank Brown, 2½ lots. There are two shafts on the property producing ore, the depth of each being 110 feet. The mining equipments consist of two hand jig plants, two boilers, two engines, two steam pumps, steam hoister and horse hoister, and the product of the land was 123½ tons of zinc ore and 17 tons of lead ore, which were sold for \$6,287.

PHELPS, BURCH AND OTHERS' LAND.

OBERT MINING CO. LEASE.

The Obert Mining Co. is incorporated under the laws of Missouri and capitalized at \$60,000. The officers of the company are S. A. Keller, president; Wm. Bateman, treasurer; Geo. Muening, secretary; A.

E. Anderson and Wm. Koopman, directors. The company owns a mining lease on 20 acres of land, located in the southeast of northeast of section 11, township 27, range 32, the land being owned in fee by W. H. Phelps, Mrs. W. B. McCallum, F. L., C. E. and J. W. Burch of Carthage, Mo. The lease is sub-leased to the following parties, who operate the land: A. E. Anderson, T. P. Burnes, E. L. Joice, J. Mamon, J. S. Evans, A. E. Butteheim, A. W. Baker, F. Garretty, E. A. Colapach and G. L. Joice. There is no concentrating mill on the lease and but one mine producing ore, the shaft of which is 140 feet in depth. The output of the land was 328 tons of zinc ore, which was sold for \$11,152.

PITCHER LEAD CO. LAND.

C. O. FRYE—FIRST LESSEE.

This tract of mining land, owned in fee by the Pitcher Lead Co. of Joplin, Mo., consists of 40 acres, and is controlled and operated under first lease by C. O. Frye of Tulsa, I. T. The equipment consists of two hand jigs, one boiler, engine and steam hoister. The mining shaft is 102 feet in depth, exposing a run of lead ore. Two ore faces, 6 by 20 feet, are being worked, and an average of six miners are employed. The product was 27½ tons of lead ore, which was sold for \$1,492.07.

PITTSBURG-JOPLIN LEAD AND ZINC CO.

The Pittsburg-Joplin Lead and Zinc Company is incorporated under the laws of Missouri, with authorized capital stock for \$100,000. The officers of the company are Jas. Balph, president; H. L. Baird, secretary. The company owns in fee simple 10 acres of mining land, located in the north one-half of northeast of southwest of section 14, township 27, range 33. This land is leased directly to miners and operators by the company, for a royalty of 20 per cent on both lead and zinc ores. These royalties paid the land owners \$18,752.33 in 1904, and in two years and a half it has produced \$275,000 worth of ore. A concentrating mill is maintained on the land with daily capacity of 100 tons. Four mines are producing ore, the shafts of which are from 105 to 185 feet in depth. Twelve ore faces, 12 by 10 feet, are worked, and the product of the land was 1,447½ tons of zinc ore, valued at \$49,511.28; 258¾ tons of silicate, valued at \$2,881.50, and 732 tons of lead ore, valued at \$41,085.22, making a total value for the three ores of \$93,478.

The lessees operating on this property are the Ora May Mining Co., Mary Ann Mining Co., Sam Hill Mining Co., Cotton Tail Mining Co. and Last Chance Mining Co.

PITTSBURG-MISSOURI ZINC AND LEAD CO.

This company, August 6, 1904, purchased the 130 acres of land owned in fee by L. P. Cunningham of Joplin, hereinafter described. It is incorporated under the laws of Missouri for \$800,000, and its officers are as follows:

M. K. Salusberry, president; H. L. Baird, secretary and treasurer and H. B. Gates, superintendent, with postoffice address—box 235, Joplin, Mo.

Although this property was acquired by the company after the year was well advanced, still the production on the entire property is accounted for in the report.

The first lessees on this property, together with their respective sub-lessees, are as follows:

HELEN LEAD AND ZINC CO.—JOPLIN.

The sub-lessees of the Helen Lead and Zinc Co. are as follows:

Condor Lead and Zinc Co., 11.8 acres—Joplin, Mo.

Holmes, Cape & Rogers, Baltimore mine—8 acres, Joplin, Mo.

Holy Smoke Mining Co.—3.5 acres, Carthage, Mo.

S. & B. Mining Co.—4.5 acres, Joplin, Mo.

Mabel Mining Co.—7.4 acres, Joplin, Mo.

J. A. Hardy & Sons, Bunker Hill mine—14.7 acres, Webb City, Mo.

Jack Rose Zinc and Lead Mining Co.—12.9 acres, Joplin, Mo.

Chitwood Zinc and Lead Co.—15.1 acres, Joplin, Mo.

HOLMES, CAPE AND ROGERS.

The sub-lessees under Holmes, Cape and Rogers are as follows:

The Mandarin Mining Co.—20.2 acres, Joplin, Mo.

Quaker Mining Co.—22.4 acres, Joplin, Mo.

Preble Mining Co.—9.5 acres, Joplin, Mo.

The Pittsburg Missouri Zinc and Lead Co. does no active mining itself, but owns the land as above indicated. This company at present owns the following acres of land, described as follows:

the east fractional quarter of section 5 and the north
west one-half of lot 2, of the northwest fractional
quarter, township 27, range 33.

The production from this property was as follows:

486 tons of zinc, @ 38.94, amounting to.....	\$408,276 90
89½ tons of lead, @ 55.08, amounting to.....	4,927 18

Total value product.....\$413,204 08

The total number of producing mines during the year was 10. The shafts ranged in depth from 140 to 180 feet, while the ore levels ranged between 135 and 175 feet. The number of ore faces exposed was 33, and the size of the same 30 by 40. There are 10 concentrating plants on the property, having a capacity each from 100 to 150 tons daily. There are 19 boilers, 12 engines, 8 steam and 2 lift pumps, 3 air compressors, 13 steam hoisters, 12 crushers and six Wilfley tables in use. Following is a description of the several mines reported:

HELEN ZINC AND LEAD CO. LEASE.

The Helen Zinc and Lead Co. is incorporated under the laws of Missouri and capitalized for \$200,000. L. P. Cunningham is president and treasurer of the company. Thos. Dolan, secretary, and W. C. Fowles, general manager. The company owns a lease on 78 acres of mining land, located in the east one-half lot 2, northeast section 5, and the north one-half of west one-half lot 2, northwest of section 4, all in township 27, range 33; the land being owned in fee by the Pittsburg-Missouri Zinc and Lead Co. The property controlled by the company is sub-leased as above indicated. There are seven concentrating mills on the lease, each with daily capacity of 100 tons. The machinery equipments consist of 19 boilers, seven engines, five steam pumps, one air compressor, three air mills, seven steam hoisters, seven crushers and two Wilfley tables. Much time was spent in prospecting and development work during the year. The product of the lease was 7,695½ tons of zinc ore, valued at \$295,000, and 27 tons of lead ore, valued at \$1,491, making a total value for both ores of \$296,700. This property is yet in its infancy in production and great things are expected of it in the future.

CONDOR MINING CO.

The Condor Mining Co., composed of J. F. Coleman and others, control 14 acres of mining land under sub-lease from the Helen Zinc and Lead Co., the land being owned in fee by the Pittsburg-Missouri Zinc and Lead Co. There is a concentrating mill on the property with daily capacity of 125 tons, equipped with boiler, engine, steam pump, three steam jigs, two steam drills, one steam hoister and one crusher. The

is one producing mine on the tract, the shaft of which is 145 feet in depth. The Condor mine is comparatively new. It only began to produce ore about the middle of August, 1904. The product at the close of the year was 350 tons of zinc ore, which sold for \$14,121.18.

MABEL MINING CO.

The Mabel Mining Co. is operating a sub-lease under the Helen Zinc and Lead Co. on five acres of land. The company is incorporated under Missouri laws for \$40,000. A. H. Hall is president and A. H. Rogers, secretary and treasurer. The company has a concentrating mill, 100 tons daily capacity, amply equipped. The product of the one mine operated was 354 tons of zinc ore and 8,810 pounds of lead ore, which were sold for \$12,318.

THE QUAKER MINES.

There are four mines on this tract and four concentrating mills adequately equipped. The product was 1,258 tons of zinc ore and 29 tons of lead ore, which were sold for \$52,052.

BUNKER HILL MINING CO.

The company is a co-partnership, composed of J. A. Hardy, Geo. Hardy, J. A. Hardy, Jr., and Federated Mines and Milling Co. of New Jersey. The company is operating 16 acres of land under sub-lease from the Helen Zinc and Lead Co., the land being owned in fee by the Pittsburg-Missouri Zinc and Lead Co. The company is working one mine shaft, 150 feet in depth. It has 75 tons daily capacity concentrating mill, equipped with boiler, engine, two steam jigs, lift pump, steam drill, steam hoister and crusher. The product of the tract was 1,441 tons of zinc ore and 3½ tons of lead ore, which were sold for \$54,606.

WEST JOPLIN LEAD AND ZINC CO. MINE.

This property, embracing 16 mining lots, was a part of the Cunningham land bought by the Pittsburg-Missouri Co., and leased to the Helen Zinc and Lead Co. John M. Argyle of Joplin controls and operates the tract under sub-lease. The equipment consists of a 100 tons capacity concentrating plant, supplied with two steam boilers, engine, steam pump, steam hoister, crusher and three steam jigs. The product was 491 tons of zinc ore, which was sold for \$16,740.26.

HOLMES, CAPE & ROGERS.

This company is incorporated under the laws of Missouri, and capitalized for \$300,000. The officers are John R. Holmes, J. H. Cape and H. Rogers. The company owns a lease on 72 acres of mining land located in the northeast quarter of section 5, township 27, range 33; the land owned in fee by the Pittsburg-Missouri Zinc and Lead Co. The company sub-leases its holding to various operators, as indicated in the general summary report of the Pittsburg-Missouri Co. There are six producing mines on the property and six concentrating mills, each with daily capacity of 100 tons, and equipped with all necessary machinery. The product of the land was 2,773 tons of zinc ore, valued at \$13,062, and 62½ tons of lead ore, valued at \$3,436, making a total value for both ores of \$116,498. The mines on this property are:

PREBLE MINING CO.

This company, operating on the Holmes, Cape & Rogers lease, is working one mine, the shaft being 150 feet in depth, and exposing three ore faces 18 feet in size. The levels of the ore bodies are 60 and 145 feet. There is one concentrating mill with daily capacity of 100 tons on the lease, equipped with two boilers, one engine, two steam pumps, three steam jigs, one air compressor, four air drills, two steam hoisters, one rusher and one Wilfley table. The product was 143 tons of zinc ore and four tons of lead ore, which were sold for \$6,026. Clyde E. Ulrich is general manager for the company.

MANDARIN MINING CO.

The Mandarin Mining Co. is capitalized for \$50,000, and incorporated under the laws of Missouri. Albert A. Huseman is president and treasurer, and Frank P. Fromhold, secretary. The holdings of the company are 20 acres in the northwest of northeast of section 5, township 27, range 33. There is one concentrating plant on the lease, equipped with one boiler, engine, two steam pumps, three steam jigs, one steam hoister and one crusher. The product was 418 tons of zinc ore, which sold for \$20,204.62.

PORTO RICO MINING CO.

This company, composed of F. D. Porter, J. W. Ground and T. J. Twin of Carthage, Mo., purchased the land heretofore known as *Porter land*. From the best information obtainable, it would appear that

J. W. Ground and T. K. Irwin have control of the property as first lessees and do a leasing business only, with the following as sub-lessees:

First National Mining Co.—14 lots, 20 per cent royalty, Carthage, Mo.

Miami Mining Co.—4 lots, 20 per cent royalty, Carterville, Mo.

Millard Mining Co.—8 lots, 20 per cent royalty, Carterville, Mo.

Womach & Mosley—5 lots, 22½ zinc and 25 lead royalty, Carterville, Missouri.

Earl P. Mining Co.—3 lots, 20 per cent royalty, Carterville, Mo.

The company owning the land does only a leasing business, and is composed of F. D. Porter, J. W. Ground and T. K. Irwin. The post-office address of this company is at Carthage, Mo.

The improvements on the land consist of four concentrating mills, equipped with sixteen boilers, five engines, seven steam jigs, one hand jig plant, embracing three hand jigs, five steam pumps, two lift pumps, two air compressors, seven air drills, ten steam hoisters, two horse hoisters and four crushers. There are nine mines on the tract, the shafts varying in depth from 40 to 180 feet. The product was 1,922 tons of zinc ore, valued at \$58,661, and 581 tons of lead ore, valued at \$31,573, making a total for both ores of \$90,234.

PORTER-GILCHRIST REALTY CO.

This company is incorporated under the laws of Missouri and capitalized for \$84,000. John D. Porter is president and Mrs. A. D. Porter, vice-president. The company owns in fee 40 acres of mining land, located in section 2, township 27, range 33, and the following named parties are operating the land:

J. W. McDonald & Co.—2 lots, 20 per cent royalty, Joplin, Mo.

Bert Snow and B. A. Reese—3 lots, 20 per cent royalty, Joplin, Mo.

Cal Cripps, Jas. Tayler and W. E. S. Kelley—2½ acres, 20 per cent royalty, Joplin, Mo.

B. B. Blow—3 lots, Joplin, Mo.

Dorsey & Co.—2 lots, Joplin, Mo.

There is no concentrating mill on the property, the operators using jigs in treating the ore. There are three mines on the tract producing ore, the shafts being from 75 to 90 feet in depth. The product was 37 tons of zinc ore and 68 tons of lead ore, which were sold for \$678.

POLLMANN AND BOWERS LAND.

The land is owned in fee by B. Pollmann, T. Bowers and the address 620 South 8th street, Kansas City, Kan.

sas. The land consists of 40 acres and is located in section 35, township 27, range 33. The company leased four mining lots to Thos. Hill of Joplin, Mo., who had just begun to operate on one of the lots when this report was made at the close of the year. However, he had taken out $2\frac{1}{2}$ tons of zinc ore and $2\frac{1}{2}$ tons of lead ore, which he sold for \$302. The rest of the tract has not been prospected, and its value as a mineral producer is not yet known.

RABBIT'S FOOT ZINC MINING CO.

The Rabbit's Foot Zinc Mining Co., with postoffice address at 32 Liberty street, New York, N. Y., is incorporated under the laws of West Virginia for \$100,000. It owns and operates 40 acres of mining land located in the northeast of northwest of section 7, township 27, range 33. The company has a 100 tons daily capacity concentrating mill on the land, which has been run to clean up the tailings, and no work was done in the ground. While the tailings were being run, pumping was also done preparatory for work in the mine. The product from the tailings was 149 tons of zinc ore, which was sold for \$4,465.

REES AND KANE LAND.

MISTLETOE MINING CO. LEASE.

The Mistletoe Mining Co. is a partnership, composed of W. B. Kane, W. A. Daugherty, Geo. H. Ruddy, Hugh Campbell, Chas. Lowrie, Ed. Hoffman and Mrs. G. W. Johnson. The company owns first lease on 60 acres of land in the northwest quarter of section 8, township 29, range 32, the land being owned in fee by O. Rees of Webb City and W. B. Kane of Carterville. The Big Kate Mining Co. operates the land under sub-lease, paying royalty of 20 per cent. The product of the land was 290 tons of zinc ore, valued at \$10,774.72, and $29\frac{1}{3}$ tons of lead ore, valued at \$1,592.80, making a total value for both ores of \$12,367.52.

RELIANCE MINING CO. LAND.

The Reliance Mining Co. is incorporated under the laws of Missouri for \$300,000. The officers of the company are F. E. Rogers, president; Chas. Moore, secretary, and L. J. Stevison, general manager. The company succeeded C. G. Smallhouse as owner and the Grey Eagle Lead and Zinc Mining Co. as original lessee of this property, September 26, 1904, and this report covers the period from that date to the end of the year. The land purchased embraces 70 acres, and is located in the south one

half northeast quarter (except 10 acres) section 8, township 29, range 32.

The following companies are operating the land:

Express Zinc and Lead Mining Co.—4 acres, 15 per cent royalty, Neck City, Mo.

Durby-Bryant Mining Co.—4 acres, 15 per cent royalty, Cartersville, Mo.

Chapman & Lennon—5½ acres, 20 and 25 per cent royalty, Joplin, Mo.

Bert Holcomb—2½ acres, 20 and 25 per cent royalty, Neck City, Mo.

Chapman & Lennan—3½ acres, 30 per cent royalty, Joplin, Mo.

Diamond Prospecting Co.—6 acres, 20 and 25 per cent royalty, Webb City, Mo.

D. S. Spinzs—4½ acres, 20 and 25 per cent royalty, Webb City, Mo.

John Dermott—5 acres, 20 and 25 per cent royalty, Webb City, Mo.

There are two producing mines on the property, shafts 200 feet in depth, four ore faces, 20 by 30 feet. The improvements on the tract consist of two concentrating plants, equipped with four boilers, two engines, two steam pumps, two steam drills, four steam jigs, two steam hoisters, two crushers. The product was 718 tons of zinc ore, which sold for \$33,136.

The Gray Eagle Mining Co., up to the time its holdings were sold and transferred to the Reliance Co., in September of 1904, made the following report of the product of the land while under its control:

Up to September 26, zinc ore mined and sold amounted to 1,533 tons, valued at \$61,480.74, and 1½ tons of lead ore, valued at \$63, making a total of \$61,544.

This, added to the receipts of the Reliance company to the close of the year, makes the total amount received from the land during the whole year, \$94,680, and the tonnage of zinc 2,251 tons.

REX MINING AND SMELTING CO. LAND.

The Rex Mining Company, with postoffice address at Joplin, Mo., is incorporated under the laws of Missouri, and capitalized for \$250,000. The officers of the company are O. H. Picher president; James Campbell, 1st vice-president, and W. H. Picher, secretary. The company owns in fee simple 1,000 acres of mining land, described as follows:

All of section 18, the south one-half of section 7, and the northwest of southwest of section 8, all in township 27, range 32.

The following lessees are operating on the land:

Sycamore Mining Co.—14 lots, paying 10 per cent royalty, Joplin,

Ashen & Co.—16 lots, paying 10 per cent royalty, Joplin, Mo.

Pearson & Co.—36 lots, paying 10 per cent royalty, Joplin, Mo.

Dunham & Co.—4 lots, paying 15 per cent royalty, Joplin, Mo.

Thomas & Co.—6 lots, paying 20 per cent royalty, Joplin, Mo.

Carney & Co.—2 lots, paying 20 per cent royalty, Joplin, Mo.

Cole & Co.—3 lots, paying 20 per cent royalty, Joplin, Mo.

Hewit & Co.—2 lots, paying 20 per cent royalty, Joplin, Mo.

There is a custom concentrating mill on the land which does cleaning for the lessees. Seven producing mines are operated, the mining shafts averaging about 90 feet in depth, and the ore bodies are at levels of 54 and 80 feet. The mineral product of the land was 362½ tons of zinc ore, valued at \$12,093.75, and 191¾ tons of lead ore, valued at \$10,024.66, making a total value for both ores of \$22,196.21.

REYNOLDSVILLE LEAD AND ZINC CO.

This company, with postoffice address at Carthage, is incorporated for \$56,000, under the laws of Missouri. D. R. Goncher is president; J. H. Cook, vice-president and J. C. Bedell, secretary. The company owns in fee 10 acres of mining land, located in section 12, township 27, range 30. The land is operated by the owners and improved with a one hundred tons capacity concentrating mill, equipped with two boilers, engine, steam pump, air compressor, three air drills, two steam hoisters, one crusher, to concentrating jigs, seven and eight cells, respectively. There are two mines on the land producing ore, the shafts of which are 225 feet in depth. The ore body is at the level of 200 feet and three 25-foot ore faces are worked. The company employ 12 miners and 8 top men, and the product was 484 tons of zinc ore, which was sold for \$18,270.53.

NEELY MINING CO. LEASE.

McGowan & Co. is a partnership, composed of W. C. McGowan, J. Benseyer, C. B. Robbins, B. F. Ford and E. E. Morris. This company, under sub-lease from the Neely Mining Co., operate five acres of land in section 6, township 27, range 29, the land being owned in fee by Reynoldsville Lead and Zinc Co. There is one producing mine on the land, shaft 180 feet in depth, two ore faces exposed, 30 by 30 feet in size. The property is improved with a 100 tons daily capacity concentrating plant, equipped with steam boiler, two engines, one lift pump, air compressor, two air drills, steam hoister and crusher. The company employs on an average 15 miners and six mill and top men, paying an average scale of wages of \$2 per day. The product was 200 tons of zinc ore, which was sold for \$6,200.

ROARING SPRINGS MINING CO.

This company owns in fee 208 acres of land, located in southwest quarter of 14, and south one-half of southeast of section 15, township 27, range 33. The company is a Missouri corporation, capitalized for \$100,000, and of which D. W. Luke is president and Robt. Scanlan, secretary and treasurer. The company does a leasing business, and the following mining companies are operating the land:

A No. 1 Mining Co.—20 lots, 10 per cent royalty, Joplin, Mo.

Keystone Mining Co.—26 lots, 10 per cent royalty, Joplin, Mo.

Turtle Mining Co.—25 lots, 15 and 20 per cent royalty, Joplin, Mo.

Ought To Mining Co.—6 lots, 15 and 20 per cent royalty, Joplin, Mo.

Peach Tree Mining Co.—4 lots, 15 and 20 per cent royalty, Joplin, Mo.

There are eight mines on the land producing ore. The mining shafts are from 40 to 125 feet in depth, exposing 12 ore faces, 12 by 15 feet in size. The improvements on the land consist of two concentrating mills, equipped with five boilers, two engines, four steam pumps, four steam jigs, four steam hoisters, five horse hoisters and two crushers. Forty-five men are employed on the property, twenty-five of whom are miners, the rest being top and mill men. The product was 670 tons of zinc ore, valued at \$24,555, and 372 tons of lead ore, valued at \$20,565, making a total value for both ores of \$45,120.

ROBB LAND.

MYERS & CO. LEASE.

Myers & Co. of Joplin, Mo., own and operate a lease on 20 acres of mining land, located in section 16, township 27, range 33, the land being owned in fee by John B. Robb of Joplin, Mo. The company is a partnership affair, composed of M. Myers, Geo. Miner, M. T. Basley, R. A. Adams, A. J. Wallace and A. E. Dixon. The equipment consists of a boiler, steam pump and steam hoister, but when this report was made the company had begun to install a complete 100-ton mill, equipped with an 80 horse-power and 100 horse-power boilers, 60 horse-power engine, 14-inch crusher, three sets rolls, 8-cell rough jig, 7-cell cleaner jig, Freeman & Shellenbach hoister and other machinery. Much time was devoted to development work during the year and the company only reports the production of 33 tons of zinc ore and one-half ton of lead ore, which were sold for \$1,678.

SCHIFFERDECKER (CHAS.) LAND.

BUFFALO LEAD AND ZINC CO. LEASE.

This mining land, located in the southwest of southwest of section , township 27, range 33, is owned in fee by Chas. Schifferdecker of Joplin, Mo., and operated by the Buffalo Lead and Zinc Co., which controls the land under first lease. The company is a partnership, composed of M. B. Bash, C. S. Bash, A. B. Trentman and H. E. Bash. The property is improved with a concentrating mill, equipped with boiler, engine, steam pump, two steam jigs and Wilfley table. Only a portion of the year was spent in mining, and the company reports the product to be 146½ tons of zinc ore and three-fourths tons of lead ore, which were sold for \$4,827.10.

MASS & STARR LEASE.

This tract of land, owned by Chas. Schiffendecker of Joplin, Mo., embraces 120 acres and is located in the southeast of southwest of section 5, township 27, range 33. It is controlled under first lease by a partnership company, composed of Geo. C. Mase, J. G. Starr of Joplin and W. A. Moses of Kansas City, Mo. The equipment of the company is a concentrating plant, supplied with two boilers, engine, steam pump, steam drill, steam hoister, horse hoister, crusher and two steam jigs. The company began to operate its mill very late in the year, but report the production of 134 tons of zinc ore, valued at \$5,573, and 34½ tons of lead ore, valued at \$2,037.87, making a total value for both ores of \$7,611. There is one mine on the lease producing ore, the shaft is 149 feet in depth, exposing two ore faces 28 by 43 feet. The ore bodies are at levels of 110 and 149 feet.

SCRANTON MINING AND SMELTING CO. LAND.

The Scranton Mining and Smelting Co. is incorporated under the laws of Missouri for \$400,000. W. G. Robertson is president of the company, and C. P. Donelson, secretary and treasurer. The company owns in fee and operates 80 acres of mining land located as follows:

Southeast quarter of northeast quarter and northeast quarter of southeast quarter of section 25, township 28, range 34. The property is improved with a concentrating plant, equipped with three boilers, one engine, three steam pumps, three steam jigs, three steam hoisters, and o

crusher. There is one producing mine on the land, three mining shafts, 145, 156 and 160 feet in depth, respectively. Two ore faces are exposed, the ore bodies being at levels of 120 and 150 feet. During eleven months of productive and development work twenty-three miners and fourteen top and mill men were employed. The product was $310\frac{1}{2}$ tons of zinc ore and $1\frac{1}{2}$ tons of lead ore, which were sold for \$12,031.

The 20-acre tract owned and operated by the company, and formerly known as the U and I mine, is located in part of the southeast quarter and northeast quarter of the southwest quarter of section 2, township 27, range 33. This tract is also improved with a concentrating plant, equipped with two boilers, engine, three steam pumps, two steam hoisters, one crusher and one Wilfley table. There is one producing mine on the land, one ore face exposed, mining shaft 190 feet in depth. Seventeen miners were employed for nine months at daily average wages of \$2.25 per man, and eleven top men and mill men for five months at the same scale of wages. The product of this mine was 365 tons of zinc ore, which was sold for \$13,570, making a total value of the output of both tracts of land of \$27,541.

SHOEMAKER (E. B.) LAND.

MOCKING BIRD MINING CO. LEASE.

This tract of mining land, consisting of six acres, held under first lease by the Mocking Bird Mining Co., and operated by the Bumble Bee Mining Co., is owned in fee by E. B. Shoemaker of Joplin, Mo. The sublessee operating the land is incorporated under the laws of Ohio for \$30,000, and is officered as follows: W. H. Warner, president; J. J. Wickham, treasurer. There is no mill on the lease and the equipment consists of two boilers, two steam pumps, two steam hoisters, seven hand jigs and such other apparatus as is necessary for the economical handling and treating of the ore. Two mining shafts are reported, the depth of which are 125 and 138 feet, respectively. The operating force consists of 12 miners and 18 other employes, and the average scale of wages is \$2.25 per day. The property produced during the year 886 tons of zinc ore, valued at \$37,564, and $29\frac{1}{4}$ tons of lead ore, valued at \$1,579.75, making a total for both ores of \$39,144.

SMITH (WM. J.) LAND.

WINNEBAGO MINING CO. LEASE.

This tract of land, owned in fee by Wm. J. Smith of Kansas City, Mo., consists of 80 acres and is located in section 26, township 28, range

33. The property is held under first lease by the Winnebago Mining Co., and operated by the following parties:

Wyatt & McManes—5 acres, 15 per cent royalty.

Burk & McCowan—2 lots, 20 per cent royalty.

S. & C. McCorkle—2 lots, 20 per cent royalty.

There is no mill on the property and the ore is cleaned on three hand jig plants. The other machinery on the lease consists of a boiler, engine, steam pump, steam hoister and two horse hoisters. This land is just being opened up and the work upon it largely in the nature of prospecting. The shafts are 30 and 95 feet in depth, respectively. Only one mine is producing ore and the product was 160 tons of silicate, valued at \$2,790.77, and 1½ tons of lead ore, valued at \$84, making a total value of \$2,875.

SMITH & STICKNEY LEASE.

The Smith & Stickney Mining Co. of Carthage, Mo., own first lease on 40 acres of mining land located in section 20, township 28, range 33, the land being owned in fee by Wm. J. Smith of Kansas City, Mo. The company does a leasing business and the following sub-lessees are operating the land:

W. H. Scott Mining Co.—5 acres, 20 per cent royalty, Webb City, Mo.

Wm. Cozad Mining Co.—2 acres, 20 per cent royalty, Webb City, Mo.

Charlie Hawk Mining Co.—4 acres, 20 per cent royalty, Carl Junction, Mo.

Thos. Baomet—4 acres, 20 per cent royalty, Carl Junction, Mo.

Thomas Electric—4 acres, 20 per cent royalty, Carthage, Mo.

There are three producing mines on the property, seven ore faces exposed, 6 by 12 feet in size, shafts are from 60 to 70 feet in depth, reaching the ore body at the 60-foot level. The equipments are three hand jig plants, containing seven hand jigs, two boilers, two engines, one steam hoister, two horse hoisters and one crusher. The work on the land during the year was largely in the nature of prospecting and developing, and the mineral product was 150½ tons of zinc ore and 12 tons of lead ore, which were sold for \$6,321.

SMITH HEIRS' LAND.

DEGARMO MINING CO. LEASE.

This mining tract consists of 44 acres, located in lot No. 2 southwest fractional forty, is controlled under first lease by DeGarmo Mining Co.,

and owned in fee by the heirs of Jeremiah Smith, deceased. The company does only a leasing business, and the following sub-lessees operate the land:

Ellis & Co.—4 acres, 15 per cent royalty, Coal Junction, Mo.

Johnson & Co.—1½ acres, 15 per cent royalty, Coal Junction, Mo.

House & Co.—1 acre, 15 per cent royalty, Coal Junction, Mo.

T. Rice—1 acre, 15 per cent royalty, Coal Junction, Mo.

Brunnet—1 acre, 15 per cent royalty, Coal Junction, Mo.

Hull & Best—1 acre, 15 per cent royalty, Coal Junction, Mo.

Flock & Co.—2 acres, 15 per cent royalty, Coal Junction, Mo.

The equipments consist of seven hand jig plants, embracing 11 jigs, one steam boiler, one steam pump, seven horse hoisters. The product from this tract was 76 tons of zinc and one-third ton of lead ore, which was sold for \$2,519. The leases on the land expired during the year and the property is not now operated.

SPENCER (CORWIN II.) LAND.

MRS. M. V. B. FEAREY LEASE.

This mining tract, embracing six acres, is located in section 6, township 27, range 32, is owned in fee by Corwin H. Spencer of St. Louis, Mo. The first lessee of the land is Mrs. M. V. B. Fearey of Quincy, Mass., and it is operated by J. P. Jennings & Co. There is one producing mine on the land, shaft 87½ feet, ore face 16 by 40 feet in size. The equipment consists of five jigs, one steam boiler, steam hoister and lift pump. Eight miners were employed, and the product during seven months spent in mining was 98½ tons of zinc ore, valued at \$4,420, and 14½ tons of lead, valued at \$865, making a total of \$5,285 for both ores.

SPONABLE (F. M.) LAND.

EAST ALBA MINING CO. LEASE.

This tract of land, owned in fee by F. M. Sponable, and controlled under first lease by the East Alba Mining Co., is located in township 29, range 32, and embraces 40 acres. The East Alba Co. is composed of H. H. Beckwith, Chas. Reinhart, Lane & Lawrence of Carthage, Mo. Six mining lots of this tract is controlled under sub-lease by F. M. Sponable, who pays a royalty to the lessee of 20 per cent. The improvements of the lease consists of a hundred tons capacity concentrating mill, equipped with boiler, engine, lift pump, two steam drills, steam hoister, crusher and two steam jigs. One mine on the tract is producing ore,

t 150 in depth, ore body at the 120-foot level. The product during year was 375 tons of zinc ore, which was sold for \$15,652.80.

STEWART (J. C.) LAND.

This tract of mining land, located in section 16, township 29, range consisting of 12 acres, is owned in fee by J. C. Stewart of Webb City, operated by the West Alba Mining Co. until about the first of October, 1904, when the work was abandoned. There is one mine on the property opened by two shafts, 210 and 235 feet in depth, respectively. 50 tons daily capacity concentrating mills are on the tract, with equipment of five boilers, three engines, eight steam pumps, two lift pumps, three steam hoisters and two crushers. Up to the time work was abandoned, fifteen men were employed, 10 miners and five top and mill men, and the product of the mines was 247 6-10 tons of zinc ore, which was sold for \$9,438.14.

SOUTH JOPLIN MINING CO. LAND.

The South Joplin Lead and Zinc Mining Company, with office address 811 New York Life Building, Kansas City, Mo., is incorporated under the laws of Missouri and capitalized for \$10,000. T. A. McClelland is president of the company and Landry Harwood, secretary. The company owns in fee 40 acres of mining land in the southwest part of Joplin, which is operated by the following first lessees:

Magnolia Mining Co.—3 acres, 20 per cent royalty, Joplin, Mo.

Ruthalta Mining Co.—3 acres, 20 per cent royalty, Joplin, Mo.

Horn & Co.—3 acres, 20 per cent royalty, Joplin, Mo.

McEdith Mining Co.—4 acres, 20 per cent royalty, Joplin, Mo.

Wing & Co.—2 acres, 20 per cent royalty, Joplin, Mo.

M. H. & K. M. Co.—4 acres, 20 per cent royalty, Joplin, Mo.

The equipment consists of four hand jigs plants, embracing eleven hand jigs, one steam and six horse hoisters. There are five mines on the property producing ore, the various shafts are from 60 to 150 feet in depth, and 10 ore faces are exposed, 8 by 20 feet in size. An average of 17 miners are employed on the property and 21 other employees. The product was 330½ tons of zinc ore, valued at \$10,431, and 262 tons of lead ore, valued at \$13,677.56, making a total value of \$24,109.

SWARTZ (P. O.) LAND.

This tract of land, embracing 160 acres, is owned in fee by P. O. Swartz of 203 North Joplin street, Joplin, Mo. The mining rights of the tract are controlled under first lease by E. A. Norris and C. M. Mc-

Abee & Co., both of Joplin, Mo. The equipment of the operators was not given in the report rendered. The product was 125 tons of zinc ore and 1,860 pounds of lead ore, which were sold for \$4,329.

TAYLOR (JOHN H.) ESTATE.

This tract of mining land, embracing 40 acres and located in section 4, township 27, range 33, is the property of the John H. Taylor estate, and is controlled under first lease by the Mattes Bros. of Joplin, Mo. John Lee of Smelter Hill controls, under sub-lease, two mining lots, and is operating same, paying a royalty of 20 and 25 per cent. The improvements on the lease consist of a one hundred tons daily capacity concentrating plant, equipped with four boilers, one engine, two steam pumps, one air compressor, five air drills, three steam hoisters, one horse hoister, one crusher, one Wilfley table, three steam jigs and one hand jig. There are two mines on the property producing ore, the shafts are from 150 to 175 feet in depth. The land owners receive a royalty of 12½ per cent, and the product was 681 tons of zinc ore, valued at \$28,745, and 91½ tons of lead ore, valued at \$4,849, making a total value of both ores of \$33,594.

TAYLOR AND GLOVER LAND.

ELLICOTT LEAD AND ZINC CO. LEASE.

The Ellicott Lead and Zinc Co., postoffice address at 940 Ellicott Square, Buffalo, N. Y., is incorporated under the laws of New York, and capitalized at \$100,000. The officers of the company are C. Brancher, president; J. W. Cobb, secretary and treasurer. The company owns and operates a lease on ten acres of land in the northwest quarter of section 5, township 27, range 33, the land being owned in fee by Taylor and Glover of Joplin, Mo. There is one producing mine on the lease, shaft 175 feet in depth, six ore faces, 24 feet in size, levels of ore bodies 147 and 176 feet. The improvements on the lease consist of concentrating mill with daily capacity of 100 tons, equipped with two boilers, engine, two steam pumps, two steam jigs, three steam drills, two steam hoisters and one crusher. Twenty-three miners were employed by the company, and the product of the lease was 639½ tons of zinc ore, valued at \$22,432.60, and 3½ tons of lead ore, valued at \$198, making a total for the output of \$22,630.60. W. H. Munger is resident superintendent for the company.

TAYLOR (MRS. LULIE) LAND.

OLIVE MINING CO. LEASE.

The Olive Mining Co., postoffice address, Box 372, Joplin, Mo., is incorporated under the laws of Missouri for \$40,000. W. B. Bash is president of the company, and L. F. Flormann, secretary. The company owns and operates first lease on a tract of mining land, described as follows: East one-half of southeast of northwest and west one-half of southwest of northeast, all in section 4, township 27, range 33, the land being owned in fee by Mrs. Lulie Taylor of Joplin, Mo. There is one producing mine on the lease, and the equipment consists of a concentrating mill, supplied with three boilers, engine, steam jig and crusher. A royalty of 15 per cent is paid the land owner, and the product was 658½ tons of zinc ore, valued at \$26,587, and 205 tons of lead ore, valued at \$11,338, making a total for both ores of \$37,925.00.

THOMPSON ESTATE.

CLARK & PAINTER MINING CO. LEASE.

This tract of mining land, embracing 12 acres, is owned in fee by the heirs of L. Thompson, residence, Joplin, Mo. The first lessees are Clark, Painter & Lewis, postoffice address, Joplin, Mo. The following companies are operating the land: Crambie & Co., two mining lots; King, Johnston & Co., one mining lot. Each of the operators pay royalty of 15 per cent. The improvements consist of hand jig plant, embracing five hand jigs, one boiler, steam hoister, horse hoister and steam pump. Two mines on the tract are producing ore, shafts 100 and 122 feet in depth, the ore bodies being at levels of 65 and 100 feet, respectively. The product was 37 tons of zinc ore, valued at \$1,295, and five tons of lead ore, valued at \$255, making a total for both ores of \$1,550.

UNDERWRITERS LAND CO.

The Underwriters Land Company is incorporated under the laws of the State of Delaware with an authorized capital stock of \$1,000,000, and the officers of the company are as follows: Geo. H. Worthington, *president*; J. M. Kennedy, *vice-president*; J. J. Wickham, *secretary*; F.

N. Bendelari, treasurer, and W. R. Caulkins, general manager. The company controls 2,220 acres of land; 2,120 acres is in Dade county, and 100 acres in Jasper county, it is on the Jasper county 100 acres of that the company has produced anything and mining machinery and plants supplied. Sixty acres of the later tract is owned in fee by the company, and 40 acres in section six, township 28, range 32, is controlled under first lease, the land being owned in fee by H. Beckwith & Co. of Carthage, Mo. The mining facilities of the company consist of a 250 tons daily capacity concentrating plant, equipped with three steam jigs, four boilers, two engines, one steam pump, two air compressors, 7 air drills, two steam hoisters, one crusher and two Wilfley tables. One mine on the property is producing ore, shaft 157 feet in depth, size of ore face, $7\frac{1}{2}$ feet. An average of sixty miners are employed, and 36 top and mill men, the daily wage scale averaging \$2.35 per man. The product was 4,663 tons of zinc ore valued at \$178,540, and 1,480 tons of lead ore, valued at \$85,588, making a total for both ores of \$264,128. When this report was made the company was sinking two incline shafts, 6 by 9 feet, in solid limestone, and was also perfecting plans for four new mills under one roof, each to have a capacity of 250 tons in ten hours. These mills are designed to have a compressor capacity of thirty-nine air drills, divided into three units each drawn by a 200 horse-power electric motor, the mills being driven by 100 horse-power motors, while the mechanical hoisters or continuous conveyors will be driven by two independent 30 horse-power motors.

UNITED ZINC CO'S. LAND.

The United Zinc Companies, with postoffice address at both Boston, Mass., and Joplin, Mo., is incorporated under the laws of the State of Maine, and capitalized for \$1,000,000. The officers of the company are Levi P. Greene, president; E. C. Howard, secretary; Franklin Playter, treasurer and superintendent. The company owns in fee 136 acres of land, described as follows:

East one-half of southeast of section 32, township 28, range 33.

Northeast of section 12, township 27, range 33.

Southwest of southwest of section 34, township 28, range 32.

The company does a leasing business, and the following companies are operating the land:

Lead and Zinc Co.—12 acres, 20 per cent royalty.

Joplin Mining Co.—8 acres, 20 per cent royalty, Joplin, Mo.

B. M. and M. F. Robinson and A. C. Bolen—4 acres, 20 per cent royalty, Joplin, Mo.

Milton Mining Co.—8 acres, 20 per cent royalty, Joplin, Mo.

Avon DeGroff—2 acres, 20 per cent royalty, Joplin, Mo.

Olympia Zinc Co.—6½ acres, 20 per cent royalty, Joplin, Mo.

Highland Mining Co.—5 acres, 15 per cent royalty, Duenweg, Mo.

The improvements on the property consist of eight concentrating plants, equipped with twenty boilers, fourteen engines, eighteen steam and two hand jigs, eight steam pumps, two lift pumps, ten steam drills, two air compressors, ten air drills, twenty steam hoisters, eight crushers and two Wilfley tables. Sixty miners and fifty-nine top and mill men are employed at a daily scale of wages averaging \$2.50 per man. There are 13 producing mines on the land, the shafts varying in depth from 160 to 175 feet, exposing 23 ore faces, 30 by 40 feet in size. The product of the land was 8,925 tons of zinc ore, valued at \$336,217.19, and 971½ tons of lead ore, valued at \$54,159.11, making a total value for both ores of \$390,376. During the year three new shafts were sunk, three new derricks erected and two incline tramways constructed to the mills.

CONQUEROR ZINC AND LEAD CO. LEASE.

The Conqueror Zinc and Lead Co. controls, under first lease, 14 acres of land owned in fee by the United Zinc Cos. of Joplin, Mo., and located in the southeast of southeast of section 32, township 28, range 33. The Conqueror Zinc and Lead Co. is incorporated under the laws of Missouri for \$150,000. Its officers are Wm. Houck, president and treasurer; Edna C. Houk, vice-president; A. D. Shockley, secretary; H. H. McNeal and Jno. D. Gongar, directors. The company operates four shafts, varying in depth from 135 to 160 feet.

This mine has been producing ore since March 1st, 1899, and during the last quarter of 1904 surpassed all previous records in ore production, bringing the annual output up to 2,560 tons of zinc ore, valued at \$104,865.88, and 59½ tons of lead ore, valued at \$3,260, making a total for both ores of \$108,136.

KING AND QUEEN MINING CO. LEASE.

This company is incorporated under the laws of Missouri for \$150,000. Its officers are B. M. Robinson, president; Mary F. Robinson, secretary and treasurer. The company is operating one producing mine on the United Zinc Co.'s land. The shafts are 165 to 180 feet in depth, there being three in number, and the level of the ore body is at

a depth of 180 feet. Two ore faces, 25 by 25 feet, are exposed, and the product for the year was 737 tons of zinc ore, valued at \$25,540, and 71½ tons of lead ore, valued at \$4,060, making a total value for both ores of \$29,600.

BOB INGERSOL MINING CO.

This company, composed of A. B. Barteau and A. O. Bolen of Joplin, Mo., control and operate an 8-acre lease of the United Zinc Co.'s land, located in the east ½ of southeast quarter of section 32, township 28, range 33. They are operating a shaft 170 feet in depth, in which pockets of ore were found from the 120 to the 160-foot levels. The company has a 60 tons daily capacity mill, and report the production of 985 tons of zinc ore, valued at \$36,635.73, and 128½ tons of lead ore, valued at \$6,050, making a total value for both ores of \$42,686.

LACKAWANA MINING CO.

This company is operating a 20-acre lease on land owned in fee by the United Zinc Co. of Joplin. The land is located in the southeast of southeast of section 32, township 28, range 33. The Lackawana Co. is incorporated for \$150,000 under the laws of Missouri, and officered as follows: J. L. Megargel, president; W. S. Mears, vice-president; A. F. Low, secretary and treasurer. There are two producing mines on the lease; shafts, 160 feet in depth. The company has two concentrating mills on the land, and employ 12 miners and 16 top and mill men. 304 tons of zinc ore was produced, valued at \$9,738.52, and 8 tons of lead ore, valued at \$440, making a total value for both minerals of \$10,178.

OLYMPIA MINING CO.

This company, which is operating an 8-acre lease of the United Zinc Co.'s land, is incorporated for \$250,000 under the laws of Missouri. The officers of the company are C. D. Pratt, president; J. H. Gallagher, vice-president; O. E. Hill, secretary and treasurer. There are two producing mines on the lease; shafts, 160 and 180 feet in depth, exposing three ore faces. The company has two mills on the lease each, with daily capacity of 100 tons, and employs 12 miners and 8 top and mill men. The production of the year was 1,599 tons of zinc ore, valued at \$57,793.83, and 144½ tons of lead ore, valued at \$7,947, making a total value for both ores of \$65,741.

In addition to the U. Z. Co.'s land in this county, they own and are operating on mineral land in Lawrence and Newton counties.

VENANGO ROYALTY CO. LAND.

PENN ZINC CO. LEASE.

This tract of mining land, containing 40 acres, and formerly known as the Bailey Mining Co. lease, is now controlled by the Penn Zinc Co. of Carthage, Mo. This company is incorporated under the laws of Missouri for \$100,000. Geo. Allen is president, and J. C. Newell, secretary and treasurer. The company does a leasing business, and the following companies are operating sub-leases on the land:

O. Williams, A. Larkin and J. Cenna—5 lots, 20 per cent royalty, Neck City, Mo.

Latherneck Co.—1 lot, 25 per cent royalty, Carthage, Mo.

Rubberneck Co.—4 lots, 30 per cent royalty, Carthage, Mo.

Smith & Tamblyn—8 lots, 20 per cent royalty, Joplin, Mo.

Penn Zinc Co.—8 lots, 7 per cent royalty.

Considerable prospecting and development work was accomplished last year, and the Penn Co. spent \$10,000 on improvements. Several promising mineral strikes are reported to have been made on the land, and the erecting of a number of new mills are under contemplation. The property is already improved with two mills each, with daily capacity of 100 tons, and equipped with three boilers, two engines, 4 steam pumps, 5 steam drills, two sets steam jigs—six jigs in each set—three steam hoisters, two horse hoisters, three air drills and one crusher. Thirty-three men are employed on the land, thirty of whom are miners.

The output of the tract during the 60 days devoted to ore production was 400 tons of zinc ore, valued at \$15,200, and 50 tons of lead ore, valued at \$3,000, making a total value for both ores of \$18,200.

PENN ZINC CO. LEASE.

The Penn Zinc Co. is a partnership company, composed of J. F. Turner, J. C. Newell, M. Torpley and Jas. Harp. The company operates one lot of the Venango Zinc Co. land. There is one shaft on the mining lot, 140 feet in depth, from which was taken during a brief period of productive operation, near the close of the year, 25 tons of zinc ore, which was sold for \$1,375.

WALLACE HEIRS—TANGNER ESTATE.

This land, consisting of 80 acres, is located in the east $\frac{1}{4}$ of east quarter of section 25, township 29, range 32, and owned in the heirs of V. A. Wallace and Henry Tangner. First lease on the land owned by Aaron Myers; address, 521 Olive St., Kansas City, Mo. by Jas. McMillan. The tract is controlled and operated under sub-lease by Howes Norris and Fred M. Webber, with postoffice address box 100, Joplin, Mo. The operators pay a royalty of 15 and 25 per cent, and the facilities consist of a 100 tons daily capacity concentrating mill, equipped with three boilers, engine, steam pump, lift pump, two steam drills, hoister and crusher. There is one producing mine on the lease; 135 feet in depth, ore body from the 58-foot level to bottom of shaft. They employ 10 miners and 5 top and mill men, the miners receive an average of \$2.62 per day and the other help \$3.00. The production was 431 $\frac{1}{2}$ tons of zinc ore, which sold for \$15,492.36. In addition to mining during the year, the operators erected their mill, and were delayed three months by a caving in of the mine.

WEBSTER (ELMER) LAND.

MUTUAL MINING CO. LEASE.

The Mutual Mining Co., composed of W. J. H. Capps, W. F. Lucke, A. Strewe and F. Kamp of Joplin, Mo., own and operate lease on 40 acres, located in the northwest quarter of section 17, to township 27, range 33, the land being owned in fee by Elemer Webster of Joplin, Mo. The company has improved the lease with a concentrating mill of 25 tons daily capacity, the equipment consisting of boiler, steam pump, steam hoister, crusher and four hand jigs. There are two producing mines on the lease, shafts 165 feet in depth, exposures, 8 by 26 feet in size. The ore body is at the 120-foot level. There are employed by the company, four of whom are miners and one man. The company pays a royalty of 10 per cent, and the mine engaged in mining, produced 65 tons of zinc ore, which was sold for \$1,000.00.

WHAT CHEER ZINC CO. LAND.

BOSTON GET THERE ZINC CO. LEASE.

Get There Zinc Co. is incorporated under the laws of the State of Missouri with a capital of \$250,000. The company owns a first mining lease on 40 acres, located in the northwest quarter of section 17, to township 27, range 33, the land being owned in fee by Elemer Webster of Joplin, Mo.

n 40 acres of land, located in the southeast quarter of section 21, township 28, range 32, the land being owned in fee by the What Cheer Zinc Co. of Providence, Rhode Island. The address of the first lessee is 19 McKinley Bldg., Joplin, Mo. This company does a leasing business, and the following sub-lessees are operating the land: Southwestern Mining and Development Co. and the New Atlas mine. Sub-lessees pay a royalty of 20 and 30 per cent on zinc and lead. Each operator has a concentrating mill, with daily capacity of 100 tons. The equipments are four boilers, two engines, four steam jigs, two air compressors, 10 air drills, two steam hoisters, two crushers and two steam pumps. There are two mines on the land which have developed sheet ore. The shafts are 165 and 185 feet in depth, exposing ore faces 10 feet high. The Southwestern mine was worked during the year and the New Atlas mine until July, producing 1,400 tons of zinc ore, valued at \$49,000, and 640 tons of lead ore, valued at \$38,000, making a total value for both ores of \$87,000.

WHEELER (J.) LAND.

H. B. H. MINING CO. LEASE.

This tract of mining land consists of 40 acres, and is owned in fee by J. Wheeler of Alba, Mo. It is controlled under first lease by the H. B. H. Mining Co. of Carterville, Mo., and 10 mining lots of which is sub-leased to M. L. Hardin of Carterville, who operates the land. There is one mine on the tract, with shaft 175 feet in depth, exposing six ore faces. The improvements consist of a concentrating mill, with daily capacity of 100 tons, and equipped with boiler, engine, steam pump, lift pump, steam drill, two steam jigs, two steam hoisters and crusher. The operators pay 20 per cent royalty, and the product was 1,410 tons of zinc ore, which was sold for \$52,188.85.

WEYMANN LAND.

This tract of land, known as the Turkey Creek Farm, and owned in fee by Henry Weymann; postoffice address, Joplin, Mo.; embraces 86 acres and is located in the northeast quarter of section 5, township 27, range 32. The sub-lessees operating the land are reported as follows:

Geo. Lurwick & Co.—16 lots, 15 per cent royalty, Joplin, Mo.

Chew & Co.—4 lots, 15 per cent royalty, Joplin, Mo.

Steers & Co.—4 lots, 15 per cent royalty, Joplin, Mo.

There is no mill on the property, and the mining facilities consist of a hand jig and horse hoister. There is one mine producing ore; the other lessees are sinking shafts on the land. The product was 2½ tons of silicate, 40 tons of lead and 9 tons of dry-bone, which were sold for \$2,457.

WYSSBROD (E. V.) LAND.

E. V. Wyssbrod and Fred Heimhoper control and operate, under first lease, 143 acres of land, owned in fee by E. V. Wyssbrod of Joplin, Mo. The improvements on their lease consist of two concentrating plants, with daily capacity of 60 and 100 tons, respectively. The equipments are six boilers, two engines, five steam pumps, four steam and four hand jigs, 5 air lift pumps, one steam drill, two air compressors, three steam hoisters and two crushers. There are two producing mines on the lease, in which both lead and zinc have been developed. The shafts are 90 and 110 feet in depth, exposing two ore faces. Six miners are employed and 25 other employes, as the work was largely in the nature of development. The product reported was 402½ tons of zinc ore, valued at \$13,492, and 66 tons of lead ore, valued at \$3,434, making a total for the output of \$16,926.

YOUNG & CRELLER LAND.

EXCELSIOR ZINC AND LEAD CO. LEASE.

The Excelsior Zinc and Lead Co. is incorporated under the laws of Missouri for \$100,000. The officers of the company are G. B. Young, president; Frank Creller, secretary and treasurer. The company does a leasing business, and the following parties are operating the land:

Harry P. Pears—10½ mining lots, Joplin, Mo.

P. C. Campbell—12 mining lots, Joplin, Mo.

P. C. Campbell—12 mining lots, Joplin, Mo.

Excelsior Zinc and Lead Co.—10½ mining lots, Joplin, Mo.

The improvements on the lease consist of one concentrating plant, equipped with two steam jigs, four hand jigs, two boilers, engine, two steam pumps, two lift pumps, three steam hoisters, one horse hoister, one crusher and two Wilfley tables. There is one producing mine on the land, shaft of which is 128 feet in depth, exposing one ore face 25 feet in size, and the ore body is at a level of 115 feet. The royalty paid to owners is 20 and 25 per cent on zinc and lead. Ten miners are on the lease and two other hands. Considerable prospecting and development work was done during the year, and the mineral productions of zinc ore, valued at \$47,408.27, and 11 tons of lead ore, valued at \$587.67, making a total value for the product of \$47,995.94.

YOUNG & HORRELSTON LAND.

This tract of land, embracing 104 acres, located in township 28, range 34, is owned in fee by G. B. Young & Horrelston, is controlled, under first lease, by the Daisy Belle Mining Co. of Joplin, Mo. Sub-leases on the land are owned and operated by the following companies:

Seven Devils—4 mining lots, 20 per cent royalty, Zincite, Mo.

Liberty Bell—9 mining lots, 20 per cent royalty, Joplin, Mo.

The mining facilities on the land consist of a concentrating plant, with 50 tons daily capacity, equipped with four boilers, two engines, four steam pumps, one lift pump, four steam hoisters, two crushers, one team jig, and two hand jig plants, embracing 8 hand jigs. There are three ore producing mines on the lease, shafts 120 feet in depth each. Eight miners are employed, at an average of \$2.25 per day per man, and the product was 174½ tons of zinc ore, valued at \$6,204.84, and ½ ton of lead, valued at \$7, making a total of \$6,212. 200 days were spent in development work and 60 days in the production of ore. The production of ore at the Seven Devils and Daisy Belle mines ceased in the spring of 1904, the ore bodies having been worked out. The remainder of the year was mostly spent in prospecting without flattering results.



JASPER COUNTY PRODUCTIONS FROM 1890 TO 1904, INCLUSIVE.

Tons of zinc ores.		Prices received for		Value zinc ores	Tons of lead ores		Prices received for		Value lead ores.	Total value years production
Zinc.	Silicate	Zinc	Silicate		Lead.	Dry-bone	Lead	Dry-bone		
74,141	...	\$24.05	...	\$1,827,900	7,160	...	\$15.34	...	\$324,086	\$2,152,002
95,376	...	23 29	...	2,220,532	7,904	...	48 98	...	391,182	2,611,724
106,014	...	22 79	...	2,416,383	11,501	...	46 09	...	530,044	2,947,287
82,587	...	22 25	...	1,838,447	10,241	...	42 48	...	434,909	2,268,416
57,012	0.965	16 97	\$9 00	1,029,312	14,762	...	35 28	...	520,883	1,550,175
71,423	291	18 17	13 45	1,337,805	15,455	...	32 95	...	509,185	1,847,050
73,906	187	20 87	13 67	1,546,449	14,899	160	38 85	24 00	492,538	2,039,362
74,223	64	19 12	12 00	1,420,291	12,308	32	33 08	21 50	404,622	1,824,913
106,325	2,837	22 40	14 83	2,357,608	15,521	390	46 30	24 00	738,127	3,095,735
138,377	1,021	34 49	14 82	4,798,022	14,353	156	47 40	20 76	688,895	5,476,920
144,851	2,808	31 54	14 28	4,601,328	14,987	113	51 80	25 11	780,022	5,381,350
177,463	677	24 58	12 88	4,371,232	21,644	318	45 43	20 85	1,089,571	5,460,853
192,584	703	31 53	12 70	5,997,620	23,213	42	45 00	21 07	1,045,720	7,042,740
176,410	629	33 26	12 35	5,877,261	20,474	6	52 98	26 00	1,112,791	6,990,052
190,623	2,890	36 43	16 35	7,317,135	27,976	201	56 00	30 85	1,552,174	8,869,317
1,780,825	19,521	\$27.50	\$12.53	\$48,942,041	224,388	1,431	\$44 99	\$26 07	\$10,605,754	\$59,547,795

parison Between the Year 1904 and the Average for the Years 1890
to 1904, Inclusive.

190,623	2,890	\$36 43	\$16 35	\$7,317,135	27,976	201	\$56.00	\$30 85	\$1,552,174	\$8,869,307
115,621	1,235	27.50	12 53	3,262,812	15,025	98	44 99	26.07	707,050	3,969,853
83,002	1,056	\$8 84	\$4.72	\$4,054,331	12,351	108	\$11.01	\$4.78	\$345,124	4,400,454

RECAPITULATION—W.

County.	Acres of land.	Capitalization	Shafts.		Tons of zinc ore.		Prices received for	
			No.	Depth.	Zinc.	Silicate.	Zinc.	Silicate.
Barry.....	280	\$80,000	1	40	225		\$28.00	
Benton.....	240	\$60,000	11	700	300		21.00	
Christian.....	240	\$5,000	2		270		24.00	
Dade.....	280	\$5,000	4		140		24.50	
Greene.....	204	72,000	8	117	1,200		25.00	
Hickory.....	200	22,000	2	40	15		22.00	
Jasper.....	10,000	\$1,212,875	207		150,000	2,000	26.00	\$50.00
Lawrence.....	1,500	4,115,000	20		20,000	2,000	25.20	17.00
Newton.....	10,871	4,420,000	114		2,721	10,000	25.00	21.00
	37,518	\$40,581,875	736		201,000	14,000	\$25.40	\$50.00

Add value of clays mined, limestone and building stone.....

Total value of all minerals mined and quarried in the Western District.....

Zinc ore averaged on the 60 per cent assay basis..... \$2

Silicates averaged..... 5

Lead ore averaged..... 5

DISTRICT, 1904.

Prices re- ceived for		Value of ores produced.		Total value lead and zinc.	Iron ore.		Tripoli.		Baryta.		Total Values
Lead ore.	Dry bone.	Zinc.	Lead.		Tons	Value.	Pounds	Value.	Tons	Value.	
		\$5,696		\$5,696							\$5,696
\$4.80		5,678	\$2,725	8,398					282	\$1,060	9,448
\$4.00		9,877	5,085	14,412	8,000	\$14,000					28,412
\$5.50		4,890	3,210	8,040							8,040
\$5.00		48,080	28,400	76,480							76,480
\$5.00		895	817	1,218							1,218
\$4.00	\$30.85	7,817,188	1,552,474	9,869,607							9,869,607
\$1.08	\$0.21	431,898	36,679	468,477							468,477
\$7.00	\$4.30	251,668	91,229	442,917			7,300,000	\$28,000			460,917
\$5.81	\$30.74	\$8,175,761	\$1,720,460	\$9,896,220	8,000	\$14,000	7,300,000	\$28,000	282	\$1,060	\$9,949,270
											\$1,000,744
											11,040,014

Dry-bone averaged... .. \$30 74 per ton.
 Iron ore averaged... .. 1.75 " "
 Tripoli averaged... .. 10 55 " "

LAWRENCE COUNTY.

Following this we furnish a table, which is a better index to the past and present mining conditions existing in the county than can otherwise be arrived at. The fluctuations in the product of lead and zinc ores and the prices received per ton, together with the total values each year, show wide differences during the last fifteen years. Note the great difference between the value of the product in 1897 of \$173,411 and that of 1899, with an output which sold for \$767,805, with just one year intervening. The average annual value of the product for the period was \$403,220. The year 1904 having advantage by \$65,257 of the average of all preceding years. The average production of zinc ore was 9,928 tons; 1904 shows an output of 10,962 tons. Silicates averaged for the fifteen years 5,078 tons, while 1904 produced but 2,617 tons. The average price received for the zinc ore during the period was \$27.23 per ton against \$35.23 per ton in 1904. Silicates for 1904 brought \$17.06 per ton against \$13.13 for the average throughout the 15 years. Lead ore production shows a very decided decline by comparison; the average output for the 15 years being 1,539 tons as compared with an output of but 159 tons in 1904. The lead ores, however, brought \$51.09 per ton in 1904, as against an average for the 15 years of \$41.18 per ton. The value of the lead product averaged for the 15 years \$66,234, while the product for 1904 was \$36,579.

Indications point to a larger output and better prices for the current year and a greatly increased production for the year 1906, if prospect and development work proves as good as the promise it furnishes.

This county has furnished many surprises in its mining industry and we anticipate agreeable surprises for both 1905 and 1906.

BOSTON-AURORA ZINC CO.

This company, with postoffice address at 19 McKinley Bldg., Joplin, Mo., is incorporated under the laws of the state of Maine for \$3,200,000. It owns in fee 538 acres, located in sections 8 and 9, township 26, range 25, and the following mining companies are operating leases on its land:

Myrtle J. Mining Co.—6 acres 15 per cent royalty, Joplin, Mo.

Loy & Tooker—10 acres, 20 per cent royalty, Aurora, Mo.

Banks & Co.—2 acres, 20 per cent royalty, Aurora, Mo.

McCullough, Maxwell & Loy, 3 acres, 20 per cent royalty, Aurora, Missouri.

There are five producing mines on the land shafts varying from 84 to 205 feet in depth. There are two concentrating mills on the land, with 100 tons daily capacity each, one owned by the Boston-Aurora Zinc Co. and one by the Myrtle J. Mining Co. The mills are equipped with two boilers, two engines, three steam pumps, four steam jigs, air compressor, two air drills three steam and three horse hoisters and two crushers. Fifty men are employed on the land, thirty of whom are miners. The mineral product reported was 2,250 tons of zinc ore, valued at \$79,760, 37 tons of silicate, valued at \$617, and 18½ tons of lead ore, valued at \$975, making a total value for the three ores of \$81,352.

BUDDIKE LAND.

Geo. S. Stone & Co. have leased the mill on this land. They do no mining, but run the mill, doing custom work for operators. During a 15-days' run they report cleaning 9½ tons of zinc ore and 29 tons of silicate, the product valued at \$908.

CLEVELAND & AURORA MINERAL LAND.

The Cleveland & Aurora Mineral Land Co., with postoffice address at Cleveland, Ohio, and Aurora Mo., is incorporated under the laws of the state of Illinois for \$500,000. The officers of the company are N. P. McKean, president; H. J. Baldwin, secretary. The company owns in fee 149 acres of land in sections 6, 7 and 8 of township 26, range 25. The following companies are operating the land: South Barango Mining Co., Big Bonanza Mining Co., Persimmon Mining Co., S. Salzlts & Co., Humphrey, Hinkler & Co., and C. G. Thompson and J. W. Ritter. All of these have postoffice address at Aurora, Mo. The mining equipment on the land consists of a 50 tons daily capacity concentrating mill, equipped with two steam jigs, two boilers, engine, lift pump, two steam hoisters and one crusher. There are seven producing mines on the tract, with shafts varying from 100 to 170 feet in depth. The product of the land for the year was 2,269 tons of zinc ore, valued at \$72,889.28, 568 tons of silicate, valued at \$7,793.62, and 6½ tons of lead ore, valued at \$328.25, making a total value for the three ores of \$81,011.15.

DECATUR LEAD AND ZINC CO.

The Decatur Lead and Zinc Company owns the fee of 40 acres of *mining land, located near Aurora, Lawrence county, in section 7, township 26, range 25, and there are two shafts sunk on the land, 130 and*

140 feet, respectively, in which zinc, silicate and lead ores have been developed, and during the year there were produced and sold 100 tons of zinc ore, valued at \$2,911, 44 tons of silicate, valued at \$608.98, and one ton of lead ore, valued at \$49.50, making a total value for the three ores of \$3,569.48. The improvements on the tract consist of two concentrating plants, equipped with two steam boilers, two engines, one lift pump, one steam drill, one air compressor, one air drill, two steam hoisters and two crushers. Nels, Reynolds & Co. of Aurora are operators on the land.

HEADLEY-JONES LAND.

The Sand Ridge Mining Co., composed of O. M. Headley and McLain Jones, is incorporated under Missouri laws for \$100,000. McLain Jones is president and O. M. Headley, secretary and treasurer of the company, with postoffice address at Springfield, Mo. The company owns in fee 80 acres of land in section 5, township 26, range 25, which it operates. The property is improved with a concentrating mill, 100 tons daily capacity, and equipped with two boilers, four engines, one complete steam jig plant, one steam pump, two lift pumps, air compressor, two air drills, steam hoister and crusher. There are three shafts, varying in depth from 170 to 335 feet, exposing four ore faces, 18 by 20 feet in size, the ore bodies being at the 90 and 320-foot levels. Eighteen men are employed, twelve of whom are miners and six top and mill men. The product for the year was 300 tons of zinc ore, valued at \$9,500, and 2 tons of lead ore, valued at \$80, making a total value for both ores of \$9,580.

KENTUCKY MINING CO. LAND.

The Kentucky Mining Co. of Aurora, Mo., own in fee 20 acres of mining land, located in the west $\frac{1}{2}$ of southwest of southwest of section 8, township 27, range 25. The company does a leasing business, and the following mining companies are operating on the land:

Quaker Mining Co.—30 lots, 20 per cent royalty, Aurora, Mo.

Allen M. and M. Co.—18 lots, 20 per cent royalty, Aurora, Mo.

Morgan & Co.—2 lots, 20 per cent royalty, Aurora, Mo.

There is one fully equipped concentrating mill on the property. Fifteen miners are employed on the land and twenty other employes. There are three producing mines, shafts varying from 65 to 110 feet in depth. Levels of ore bodies are 60, 90 and 100 feet. The product for the year was 1,492 tons of zinc ore, valued at \$51,177.25, and 40 tons of lead ore, valued at \$1,837.60, making a total value for both ores of \$53,014.85.

QUAKER MINING CO. LEASE.

The Quaker Mining Co. is incorporated under the laws of Missouri for \$60,000. R. L. James is president of the company and J. C. Hisey, secretary. The company controls and operates 13 acres of land, under first lease, owned in fee by the Kentucky Mining Co. The lease is improved with a concentrating mill, with daily capacity of 150 tons, and equipped with three steam jigs, three boilers, three engines, two lift pumps, air compressor, three air drills, steam hoister and crusher. There are three producing mines on the lease, shafts 90 to 125 feet in depth, exposing 5 ore faces. The levels of the ore bodies are 25, 50, 75, 90 and 125 feet, respectively. The company employed 15 miners and 8 top and mill men, and produced during the year 1,293 tons of zinc ore, which was sold for \$36,998.57.

LILES LAND.

This tract, embracing 37 acres of land, located in section 7, township 26, range 25, is owned in fee by T. J. Liles and controlled, under first lease, and operated by Sebrun Bros. of Aurora, Mo. The lease is improved with a 100 tons daily capacity concentrating plant, equipped with three boilers, three engines, two steam pumps, two lift pumps, two steam drills, two steam hoisters and one crusher, twelve steam jigs. There are two producing mines on the lease, with mining shafts 95 and 105 feet in depth, respectively, exposing three ore faces. Twenty miners are employed, and the product for the year was 520 tons of zinc ore, which was sold for \$19,760.

BALDWIN AND MRS. E. B. WEED LAND.

MIDLAND MINING CO.

This tract of mineral land, owned by Dudley Baldwin and Mrs. Edith Baldwin Weed, with postoffice address at Cleveland, Ohio, consists of 20 acres, and is situated in section 7, township 26, range 25. These parties style themselves the "Midland Mining Co.," and have given first lease on the property to the John Bull Mining Co., which company pays 15 and 20 per cent royalty to the Midland Co. on zinc and lead. The total product of the land for the year was 485 tons of zinc ore, valued at \$13,897, 10 tons of silicate, valued at \$184, and 1½ tons of lead ore, valued at \$58, making a total value of the three ores of \$14,139.

him out occasionally. This boy, however, lost control of the machinery and his boss was killed. Another boss met death by coming up in a tub in which there was considerable ore, which was unlawful and in addition proved he was working under unsafe conditions—the rope should not have broken even though the tub was filled with ore; the factor of safety in this instance appears to have been ignored. The truth is, that when the facts concerning many of the accidents are sifted and the true causes arrived at, carelessness upon the part of the victim or mine management will be found too frequently.

The larger operators of all kinds of mines will be found following strictly business methods, among which is the avoidance of accidents, and they are freer from accidents than others. Aside from all feelings of humanity, a purely selfish incentive suggests the wisdom of escaping law suits, by providing the best possible security against accidents. The money spent in prevention will in the end be found far less in amount than that paid for life, limb and lost time. The old and silly fear regarding State Mine Inspectors is being rapidly relegated to the rear, as it should be. There is no land owner or operator who has property leased that should not hail with pleasure the appearance of the up-to-date Inspector. The experience of the Big Six Development Co. furnishes the reasons, without further mention of that case. The State Mine Inspector, where he properly performs his duty as such, after having a thorough practical training, and then having absorbed as he carefully inspects the numerous mines of the State the very best thought and effort of all the mine managers, together with the opportunity to observe every new method and its results, is thus furnished an equipment for his duties not common to a foreman confined to one mine. The services of such an Inspector can easily be made invaluable to operators and miners. The Inspector of the State should not be regarded as a spy, pure and simple, or that his object is to seek an opportunity to cause the company an outlay of money, *but to make sure the miner and mine is safe.* The truth being that in doing this, the interest of both operator and miner are served and one cannot be divorced from the other. The Mine Inspector that can go into a mine and by his well trained eye in looking after dangerous places, observe the same quickly and furnish warning, is a blessing to all concerned. He meets the foreman of the mine and finds him in trouble over some new or perplexing condition. He says to him, I know where they have a remedy for just this very thing, and it worked like a charm. The foreman gets the information and is thankful. Some operators send for the Mine Inspector in order *to secure the benefit of his wide experience.* These experiences have occurred in our State and can be made to occur so frequently and with

SANDY HILL MINING CO.

This company, with postoffice address at Aurora, Mo., owns and operates 80 acres of land in section 5, township 26, range 25. The company is incorporated under the laws of Missouri for \$200,000, and the officers are A. G. Knisaly, president; J. M. Maret, secretary and treasurer. The land is improved with a concentrating mill, daily capacity 100 tons, and equipped with two boilers, two engines, steam pump, lift pump, two steam drills, steam hoister, crusher and three steam jigs. The company employs 14 miners and 6 mill and top men, and report the production of 624 tons of zinc ore, valued at \$21,796. There is one producing mine on the land, with mining shaft 175 feet in depth.

SHAPMAN LAND.

This tract of mining land embraces 220 acres, and is owned in fee by J. W. Shapman of Venitia, I. T. First lease on the land is owned by J. B. Davis of Scott City, Mo., who operates the land. The improvements consist of a concentrating plant, equipped with five rougher and six cleaner jigs, two boilers, two engines, one lift pump, one steam drill, one steam hoister and one crusher. There is one producing mine on the land, with shaft 185 feet deep, and the product reported for the year was 100 tons of zinc ore, which was sold for \$4,000. This mine is new, as is also the plant, and the year was spent largely in developing mine and building the plant.

STOTTS HEIRS LAND.

MT. VERNON MINING COMPANY.

This tract of mining land, embracing 14 acres, is owned in fee by Stotts heirs of Stotts City, Mo. The land is held, under first lease, by Mt. Vernon Mining Co. of Mt. Vernon, Mo., and operated under sub-lease by H. F. McFarlane. The lease is improved with a 65 tons daily capacity concentrating plant, equipped with two boilers, engine, steam pump and two steam jigs. There is one mining shaft on the property, 200 feet in depth, and the mineral product was 148 tons of zinc ore and 6-10 tons of lead ore, which were sold for \$5,038.

ILLINI MINING CO.

This company, composed of J. W. Hamilton, Geo. A. Carr and John Rhule, own lease on 25 acres of land, located in the southeast of southeast of section 26, township 28, range 28, the land being owned in fee by the heirs of Green Stotts. There is a 200-foot shaft on the lease, but on account of water the ground was not worked, and the company which has a 50 tons daily capacity mill on the land, was occupied in running tailing, getting a product of 142 tons of zinc and one ton of lead ore, which were sold for \$4,957.

JULIA WEST MINE.

The Julia West Mining Co. hold first lease on 20 acres of land, owned in fee by the heirs of Wash. Stotts, and located in the southeast quarter of section 26, township 28, range 28. The land is operated, under sub-lease, by Stephens, Reed & Co. of Stotts City. There is one mine on the property producing ore, the shaft of which is 250 feet in depth, exposing three ore faces, 20 by 20 feet in size. The lease is improved with a concentrating plant, with daily capacity of 100 tons, and equipped with boiler, three engines, steam pump, two lift pumps, steam drill, steam hoister and crusher. The product for the year was 149½ tons of zinc ore, valued at \$6,732.67, and 43 tons of lead ore, valued at \$2,346.03, making a total value for both ores of \$9,079.70.

SUTH LAND.

ALTA MINING CO. LEASE.

The Alta Mining Co. of Joplin, Mo., is incorporated under the laws of Missouri for \$15,000. The company controls 20 acres of land, located in the north ½ of northeast of northeast of section 14, township 26, range 33, the land being owned in fee by Etta H. Suth of Aurora, Mo. The company does a leasing business, and the following operators are working the land:

DeMartin & Co., 2 mining lots.

Hymer & Co., 3 mining lots.

Mitchell & Co., 2 mining lots.

Cummings & Co., 1 mining lot.

Russell & Co., 3 mining lots.

Ashworth & Co., 1 mining lot.

The equipment reported consists of seven horse hoisters and five

A jig plants, embracing six jigs. There are six producing mines on land, with shafts from 40 to 83 feet in depth, exposing 7 ore faces. Twenty-five men are employed on the land, 20 of whom are miners and 5 top or surface men. The product of the land for the year was 1,000 tons of silicate, valued at \$9,600, 3½ tons of lead ore, valued at \$1,490, and 942 tons of dry-bone, valued at \$28,557.61, making a total value for the three ores of \$38,354.31.

TERRE HAUTE MINING CO. LAND.

The Terre Haute Mining Co. of Terre Haute, Ind., own the fee of 100 acres of land, located in section 5, township 26, range 25, Lawrence county, on which there are two producing mines, in which has been developed zinc, lead and silicate, and during the year there were produced 64 tons of zinc ore, valued at \$1,600, 197 tons of silicate, valued at \$3,449, and 30 tons of lead ore, valued at \$1,490, making a total value for the three ores of \$6,439. The improvements on the land consist of two hand jigs, two boilers, two engines and two steam hoisters. The property is under the management of Jacob Theilin of Aurora, and the person reported operating on the land is Reynolds & Co. of Aurora, Mo.

UNITED ZINC CO.'S LAND.

C. C. PLANK.

The United Zinc Co., with postoffice address at Aurora, Mo., own the fee of 81 acres of land in the southeast of southwest of section 7, township 26, range 25. A detailed description of this company can be found in connection with its Joplin holdings. C. C. Playter is superintendent for the company at Aurora. C. C. Plank is operating 10 acres of this land, paying a royalty of 10 per cent. The improvements upon the tract consist of a concentrating mill, with daily capacity of 100 tons, equipped with three boilers, engine, lift pump, two steam drills, three steam hoisters, two horse hoisters, crusher and two steam jigs. The product for the year was 84 tons of silicate, valued at \$1,503.48, and 3 tons of lead ore, valued at \$159.90, making a total value of both ores of \$1,663.38. The work during the year was largely in the nature of prospecting and development. Eleven drill holes were sunk averaging 200 feet in depth, and two shafts were sunk, one 235 and one 260 feet deep, developing ore of considerable thickness and purity. Large plant was installed late in the year, with two 100-horse power boilers, three steam jigs and Wilfley tables, mill, 30 rolls, hopper, capacity 275 tons. Further extensive plans for improvement are designed for the year 1905.

defective rope, it broke when within ten feet of the surface, precipitating the tub with its human freight 100 feet to the bottom of the shaft, the man being instantly killed. It is said that Hoover's attention had been called to the rope and its insecure fastenings some days before. The deceased was well known in the district. He left a wife and three children. The coroner's verdict was "accidental death."

William Morrison, a miner employed at the Marion M. mine on the United Zinc Company's land, at Chitwood, was instantly killed March 25, 1904, by a cave-in. According to the evidence adduced at the inquest, the deceased, with twelve other men, was at work in a drift when a section of the roof fell in, a large slab of rock falling upon Morrison with fatal results. The drift in which the accident occurred was not timbered, the formation being mostly flint, and according to the testimony of witnesses considered "hard ground." The coroner's jury found that "William Morrison came to his death in a drift of the Marion M. mine on the United Zinc Co's. land, by being struck on the back by a large boulder falling from the ceiling of said drift." Deceased left a wife and child. He was not insured.

Earl Hudleston, a miner working for the Rice Mining Company, was killed April 11, 1904, by the fall of a boulder. The deceased was at the time of the accident engaged with another miner at work on the face of the drift, and as there was not space enough to allow both men to work at the same time, they did so alternately. When the fall of rock occurred Hudleston was smoking his pipe, apparently unconscious of impending danger. The coroner did not summon a jury, deeming it unnecessary so to do.

Charles Main, a shoveler employed in the Eleanor or "Cockle Burr" mine, operated by the Durby-Bryant Mining Company, near Neck City, was instantly killed April 22, 1904, by a falling boulder which struck him on the head. The mine was a new one, and the men were engaged in opening up a drift when the boulder fell. The victim of the accident was a young married man and left a wife and child. Coroner's verdict was "unavoidable accident."

Arthur Benton, a young and inexperienced man, was killed, May 12, 1904, by the accidental dropping of a tub down a shaft at the Fairview mine. The deceased was one of three men engaged in handling the tubs, and at the time of the accident he was standing in the shaft

ed of	Pri ceiv
Silicate	Zinc ore, per ton....

37	\$35 45
29	32 62
68	32 34
44	29 11
....	31 66
....	34 29
....	38 00
....	32 00
10	28 60
68	....
....	34 50
....	29 30
....	34 93
....	40 00
....	34 00
....	34 52
....	45 00
80	....
97	25 00
84	....
00	....
17	\$35 23

03	....
....	\$32 70
15	34 08
5	32 00
....	32 17
....
....	40 00
....
....	38 00
01	31 21
1	39 50
....	38 75
19	35 04
....	30 80
....	40 00
40	....
....	43 20
....
51	34 30
03	....
....	36 48
21	....
99	\$35 64

NEWTON COUNTY.

The first discovery of lead ore in Southwest Missouri was made in this county in the year 1847. The first lead furnace in the district was erected in the county in 1850. Blow and Kennett secured control of a section of land, which embraced the territory where most of the mining was done in and about what is now known as Granby. In 1858 the above named gentlemen completed the best and largest furnace in all that section of the State at that date. It was on this territory that the largest deposit of calamine ever mined in the United States was found. Calamine is more commonly known among the miners as silicate, and this ore, as well as baryta, up to 1870 was regarded as useless, so far as this county was concerned. The Granby Mining and Smelting Co. was organized in 1866, from which date it has operated most successfully ever since. In fact, this company has been the chief factor, not only in the mining of lead and zinc ores in this county, but in the smelting of the same as well. The output of this company, embracing the product of Jasper county, has averaged around the million dollar mark each year for many years. The company owns the fee to 10,000 acres of land in this county alone. There are several mining localities in the county which have produced much ore. The ores are mined at the 75, 135, 145, 185 and 205-foot levels.

Following will be found a table covering the last 15 years, 1890 to 1904, inclusive, which shows the respective productions annually. From this table it may be observed that there was a total production for the period of 106,253 tons of zinc ore, which averaged \$24.66 per ton. Silicate shows a total output of 73,211 tons, which averaged \$16.42 per ton. The total tonnage of both the ores (zinc and silicate) amounts to 358,928,000 pounds, which sold for \$3,823,109.

Lead ores show a total product of 25,888 tons, which sold on an average of \$45.12 per ton. Dry-bone was mined to the extent of 2,028 tons, and averaged for the period \$28.03 per ton. The total of the two ores show an output of 55,832,000 pounds, which sold for \$1,226,013. The value of both lead and zinc ores amounted to \$5,049,122. It is to be remembered in connection with the average prices given for zinc ores, that the price furnished is for zinc ores of all grades from the lowest to the highest. Zinc ores of high grade brought in 1904 as much as \$52.00 per ton, yet with the fluctuations in price and difference in grades of ore the price of the ore in this county shows a general average

of \$35.64 per ton, while the average for the past fifteen years shows but \$24.66 per ton, or an increase over past experience of 45.83 per cent. The average price of lead ore for the fifteen years was \$45.12. The average of 1904 was \$57.00 per ton, or an increase of 24.79 per cent. If operators have survived and made money during the past fifteen years, they certainly have very greatly increased opportunities under present conditions. The prices of both lead and zinc ores for 1905 will average much better than they did in 1904.

NEWTON COUNTY PRODUCTIONS FROM 1890 TO 1904, INCLUSIVE.

Years	Tons of zinc ores.		Prices received for		Amount received for zinc product.	Tons of lead ores.		Prices rec'd per ton for		Amount received for lead ores.	Total receipts from lead and zinc ores.
	Zinc.	Silicate.	Zinc.	Silicate.		Lead.	Dry-bone.	Lead.	Dry-bone.		
1890	8,285		\$20.06		\$166,236	1,757	4	\$19.90	\$25.00	\$87,700	\$253,936
1891	7,961		17.70		139,829	1,601		17.11		70,406	210,235
1892	8,163	180	20.68	\$10.85	172,529	1,240		11.06		56,059	227,588
1893	2,963	5,080	19.00	10.05	107,850	1,457		40.07		78,891	186,741
1894	1,982	5,588	17.36	9.00	83,396	1,690		34.20		57,841	141,237
1895	1,800	6,989	17.49	10.20	102,972	1,781		33.45		59,679	162,651
1896	1,169	5,804	19.00	13.75	65,751	1,876		33.92		63,743	159,494
1897	2,680	3,840	20.55	12.40	102,719	972		41.34		40,179	142,898
1898	7,848	4,011	18.30	11.04	178,789	882	101	48.82	27.17	45,800	224,589
1899	11,148	3,227	31.59	17.00	405,942	1,158	109	49.34	21.81	59,922	465,864
1900	12,316	4,134	30.72	21.61	467,786	1,827	327	51.80	27.27	103,585	571,371
1901	16,765	7,154	22.65	18.77	513,032	3,502	503	46.60	23.13	175,073	688,105
1902	12,183	9,251	25.44	21.08	504,703	3,015	198	46.10	25.68	144,087	648,790
1903	7,740	8,031	33.54	21.24	430,327	1,697	633	52.71	35.72	112,830	543,157
1904	3,731	10,399	35.64	21.03	351,688	1,517	133	57.00	34.30	91,220	442,907
.....	\$106,253	73,211	\$24.66	\$16.42	\$3,423,109	26,888	2,028	\$45.12	\$28.03	\$1,226,013	5,049,122

BALES LAND.

F. D. Bales of Joplin owns and operates 80 acres of mining land, located in the southeast quarter of section 11, township 26, range 33. He operates two shafts by horse power, 95 and 40 feet in depth, respectively, and ore bodies exposed are at bottom of each shaft. Twelve miners are employed at an average of \$2 per day per man. The product was 803 tons of silicate, valued at \$11,486.70, and 55 $\frac{3}{4}$ tons of dry-bone, valued at \$2,095.84, making a total value of both ores of \$13,582.

H. E. BUCKLIN LAND.

The Big Eureka Mining Co. and the Bonnie Pearl Mining Co., both with postoffice address at Spurgeon, own and operate mining leases on 125 acres of land, located in sections 31 and 32, township 26, range 32, the land being owned in fee by H. E. Bucklen, with postoffice

over the body. The victim of the accident was a single man, and the only insurance carried was a liability policy issued to the company he was working for to secure it against damage through accidents.

Harry Snyder, miner employed in the mine of the Big Kate Mining Co., was killed by a fall of roof December 5, 1904. The roof from which the rock fell, which killed the unfortunate man, was deemed to be safe. The coroner's verdict was as follows: "I. C. Ames, coroner of Jasper county, Missouri, after examination of several witnesses and receiving such other evidence obtainable, do find that Harry Snyder came to his death in the Big Kate mine at Neck City, Mo., December 5, 1904, by being struck and killed by falling boulders."

JEFFERSON COUNTY.

Horace C. McClain, while timbering a shaft for the Valle Mining Company, the work being done under contract with the company, met with an accident December 24, 1904, which resulted fatally a week later. A rock, supposed to have slipped from a crevice in the shaft, fell on his head, fracturing his skull. There were no witnesses to the accident. The deceased was a widower and left seven children.

JASPER COUNTY.

Mason Farrell, a miner employed at a mine operated by Mose, Power & Co. on the Continental land, was fatally injured by falling rock and died on the day of the accident before reaching the hospital, November 8, 1904. At the time of the accident deceased, with several others, were shoveling when the fall of a large boulder and several tons of dirt fell without warning. Several of the miners were injured by this same fall, fortunately but slightly. The question arises—when was the roof examined prior to this fall? The deceased was 34 years of age and spent the greater part of his life in the county.

CLARK AND OTHERS' LAND.

SOUTH SHOAL CREEK MINING CO. LEASE.

South Shoal Creek Mining Co. of Joplin, Mo., composed of A. P. Clark, M. D. Reding, Jas. Iseral and Wm. Hill, own and operate 40 acres of land, located in the northwest of northwest quarter of section 2, township 27, range 33, the land being owned in fee by A. P. Clark, Frank Clark and W. D. Reding of Joplin. The equipment consists of hand jig and horse hoister, and the one producing mine has shafts 45 and 116 feet in depth, respectively. The company pays a royalty of 20 per cent, and produced 7 tons of lead ore and $\frac{3}{4}$ ton dry-bone, which were sold for \$427.

GEO. C. MEESE & COMPANY.

Geo. C. Meese & Co. own and operate a lease on 120 acres of land in the northwest of northeast quarter of section 35, township 26, range 33, the land being owned in fee by Clark & Co. of Joplin. There is one producing mine on the lease, shaft 80 feet in depth, exposing two ore faces, 10 by 12 feet in size. The mining equipment consists of four hand jigs, boiler, steam pump, two steam hoisters and one horse hoister. Work during the year was largely in the nature of prospecting, but 90 days was devoted to mining, and the product was 37 tons of zinc ore and $\frac{3}{4}$ ton lead ore, which was sold for \$1,543.

DILWORTH LAND.

R. F. Dilworth, address, Box 682, Joplin, Mo., owns in fee four acres of mining land in the southeast quarter of section 19, township 27, range 32, on which a mining lease is owned and operated by Geo. A. W. S., B. W. and J. F. Warren of Joplin. There is one shaft, 85 feet deep, on the lease, in which lead ore has been developed. The facilities of the Warren Co. consist of a hand jig, boiler, steam pump and steam drill. Work on the lease was mostly in the nature of prospecting and developing. A short time was devoted to mining, in which $15\frac{1}{2}$ tons of lead ore were produced, and sold for \$868.

ELLIS (J. W.) LAND.

This track of land, embracing 10 acres, and located one mile south of Diamond is owned and operated by J. W. Ellis, of that address. There is one shaft on the tract, in which zinc ore has been developed, and the product was 150 tons, valued at \$5,700.

EMPIRE ZINC CO. LAND.

The Empire Zinc Co. is incorporated under the laws of Missouri, and capitalized at \$300,000. The officers are S. S. Palmer, president; A. P. Cobb, secretary, and H. R. Borie, resident manager. The company is a large land holder, owning land in several counties, and does principally a leasing business. The Home Mining Company controls and operates a lease on 8 mining lots of the Newton county land, belonging to the Empire Zinc Co., and the ore production was 173 $\frac{3}{4}$ tons of zinc ore and 101 tons of silicate, which were sold for \$7,285.23. The mine improvements are reported as being one concentrating plant, equipped with all the machinery and appliances required for the treatment of ore, and embracing four steam jigs, two boilers, engine, two steam pumps, air compressor, four air drills, two steam hoisters and one ore crusher. The land owned and controlled by the company is described as follows:

LANDS OWNED BY EMPIRE ZINC CO.

Shoal Creek, 640 acres.—The east half of section 35, township 27, range 34; and the north half of section 36, township 27, range 34.

Matson, 839 acres.—The south half of section 28, township 27, range 32; and the west half of the northwest quarter of section 26, township 27, range 32; and the southeast quarter of the northwest quarter of section 26, township 27, range 32; and the east half of section 27, township 27, range 32; and the east half of the southwest quarter of section 27, township 27, range 32.

Vinal Land, 1,267.96 acres.—The west half of the southeast quarter and southwest quarter of section 3; the southeast quarter and east half of southwest quarter of section 4; the northeast quarter of northeast quarter of section 8; the north half of section, east half of southeast quarter and north half of southwest quarter of section 9; and northwest quarter of northeast quarter, north half of northwest quarter, southwest quarter of northwest quarter, northeast quarter of southwest quarter and west

half of southwest quarter of section 10; all in township 25 north of range 31, in Newton county, Missouri.

Gerbing, 160 acres.—The north half of the northeast quarter of section 11, township 26, range 29; and the north half of the northwest quarter of section 11, township 26, range 29.

FREEMAN AND OTHERS' LAND.

This tract of land, embracing 40 acres, is located in the northwest of northeast of section 35, township 27, range 33, and is owned in fee by J. W. Freeman and S. C. Price of Joplin, and J. D. Howard of Denver, Col. The following parties are operating leases on the property:

J. B. Reding—2 mining lots, 20 per cent royalty, Joplin, Mo.

A. P. Clark—2 mining lots, 20 per cent royalty, Joplin, Mo.

W. D. Reding—2 mining lots, 20 per cent royalty, Joplin, Mo.

J. A. Clark—2 mining lots, 20 per cent royalty, Joplin, Mo.

McClelland & Co.—4 mining lots, 20 per cent royalty, Joplin, Mo.

Frank Sowders & Co.—2 mining lots, 20 per cent royalty, Joplin, Mo.

The first lease is owned by J. A. and A. P. Clark and J. B. Reding. There are three shafts on the tract which have developed ore, exposing 4-foot ore faces at the levels of 60, 85 and 100 feet. The work of the operators during the year was principally confined to development, there being only reported the production of 2 tons of zinc ore, 1 ton of silicate and 11½ tons of lead ore, which were sold for \$763.

GILT EDGE MINING CO.

The Gilt Edge Mining Co. is a corporation organized under the laws of the state of Kansas, with an authorized capital stock of \$50,000. The officers of the company are as follows: W. H. Rose, president; T. E. Henshaw, vice-president; S. J. Heer, secretary, and E. T. Battin, treasurer. The company owns three-fourths of the fee, and Victor and Dora Erickson one-fourth of 20 acres of land situated about three miles west of Diamond, Newton county, in north ½ of northeast of southeast of section 12, township 26, range 32. Two shafts, which have developed ore, are reported on the land, the depth of which are 50 and 150 feet, respectively, and during the year there were produced and sold 620 tons of zinc ore, valued at \$24,049.48, and 12 tons of lead ore, valued at \$682.14, making a total value for the two ores of \$24,732.62. The mining improvements on the land consist of a complete concentrating plant, equipped with three boilers, one engine, one steam pump, one lift pump, air compressor, three air drills, two steam hoisters, one crusher and two steam jigs.

GRANBY MINING AND SMELTING CO.

NEWTON COUNTY PROPERTY.

The Granby lead and zinc mines in Newton county take their name from being situated in the vicinity of the town of Granby, and on the further fact that they are owned and controlled by the Granby Mining and Smelting Co. The mines are very productive and famous, and have been a source of wealth for the owners of the land as well as the county and State.

The lands on which these mines are located are held in fee by the Granby Mining and Smelting Co., in addition to other lands surrounding them, aggregating in all 9,415 acres, that are under the immediate control of the officers of the company, residing at Granby.

The company does an almost exclusive leasing business, and the following companies are operating leases on the Newton county holdings:

Pennsylvania Mining and Smelting Co.—31 acres, 10 per cent royalty, Granby, Mo.

Wyoming Mining and Milling Co.—16 acres, 10 per cent royalty, Granby, Mo.

Mears Mining Co.—22 acres, 15 per cent royalty, Granby, Mo.

Little Boss Mining Co.—26 acres, 20 per cent royalty, Granby, Mo.

The mining improvements on the property consist of five concentrating plants, with daily capacity of 100 tons each, equipped with 60 rollers, 50 engines, 11 steam pumps, 46 lift pumps, five steam drills, one air compressor, three air drills, 63 steam hoisters, 12 horse hoisters, 10 ore crushers, 28 steam jigs and 32 hand jigs.

There were 75 producing mines operated during the year, the shafts of which are from 40 to 250 feet in depth, exposing 75 ore faces, the ore bodies being at levels from 40 to 250 feet. Three hundred and ten miners and 110 top and mill men were employed on the land, at an average daily wage of \$2 per man.

The product from the mines during the year was as follows:

	Tons.	Amount.
Lead ore at \$35.04 per ton.....	1,095	\$38,368 84
Galena at \$22.30 per ton.....	8,410	187,604 87
Gold ore at \$58.40 per ton.....	1,017	59,392 80
Zinc bone at \$16.52 per ton.....	52	859 14
Total.....	10,574	\$286,316 65

JASPER COUNTY—Continued.

Companies.	Operators.	Postoffice.
Calumet Z. and L. Co.	Kathryn M. Co.	Neck City.
Calumet Z. and L. Co.	Dolly M. Co.	Neck City.
Calumet Z. and L. Co.	Cole & Ingersoll.	Neck City.
Carter, Dr. J. A.		Carthage.
Carter, Dr. J. A.	N. Y. & St. L. M. & Mfg. Co.	Joplin.
Carter, Dr. J. A.	Jno. Harrington	Joplin.
Carter, Dr. J. A.	E. Rowllins	Joplin.
Carter, Dr. J. A.	J. Creek	Joplin.
Carter, Dr. J. A.	H. Tilley	Joplin.
Carter, Dr. J. A.	C. Hollywood	Joplin.
Carter, Dr. J. A.	Thirty-Eight M. Co.	Joplin.
Carter, Dr. J. A.		Diamond.
Carter, Dr. J. A.	Log Cabin M. Co.	Duenweg.
Castle Rock M. Co.		Joplin.
Castle Rock M. Co.	E. B. Edes & Co.	Joplin.
Castle Rock M. Co.	New Highland M. Co.	Joplin.
Cave Springs Consolidated Co.		Joplin.
Cave Springs Consolidated Co.	J. E. Raymond & Co.	Girard, Kansas.
Cave Springs Consolidated Co.	W. C. McMillan.	Girard, Kansas.
Center Creek M. Co.		Webb City.
Center Creek M. Co.	D. C. McConey.	Webb City.
Center Creek M. Co.	J. A. Hardy & Sons.	Webb City.
Center Creek M. Co.	Surings & Co.	Webb City.
Center Creek M. Co.	B. Smith & Co.	Webb City.
Center Creek M. Co.	Raymond & Co.	Webb City.
Center Creek M. Co.	Beasley & Co.	Webb City.
Center Creek M. Co.	James, Gale & Co.	Webb City.
Center Creek M. Co.	Good Sheperd M. Co.	Webb City.
Center Creek M. Co.	Williams & Co.	Webb City.
Center Creek M. Co.	Ham M. Co.	Webb City.
Center Creek M. Co.	Roll & Co.	Webb City.
Center Creek M. Co.	Simmons & Co.	Webb City.
Chase, Frederick A.		Providence, R.
Chase, Frederick A.	Consolidated Jack M. Co.	Duenweg.
Chase, Frederick A.	Deval M. Co.	Duenweg.
Chase, Frederick A.	Larime M. Co.	Duenweg.
Chase, Frederick A.	Webster Matt M. Co.	St. Louis.
Chase, Frederick A.	Isabelle M. Co.	St. Louis.
Chase, Frederick A.	Hubert M. Co.	St. Louis.
Chew, Phil., & Others.		St. Louis.
Chew, Phil., & Others.	Abb M. Co.	Webb City.
Chew, Phil., & Others.	Lee M. Co.	Webb City.
Chew, Phil., & Others.	Palley & Co.	Midway.
Chew, Phil., & Others.	Greene K. M. Co.	Webb City.
Chew, Phil., & Others.	P. H. Smith & Co.	Webb City.
Chew, Phil., & Others.	W. H. Smith & Co.	Webb City.
Chew, Phil., & Others.	Mercantile M. Co.	Webb City.
Chinn, Mrs. E. J.		Webb City.
Chinn, Mrs. E. J.	I. W. Aylor & Co.	Webb City.
Chinn, Mrs. E. J.	Eleventh Hour M. Co.	Webb City.
Chinn, Mrs. E. J.	Chapman M. Co.	Joplin.
Chinn, Mrs. E. J.	Chenoweth & Elrth	Webb City.
Chinn, Mrs. E. J.	Nutmeg M. Co.	Webb City.
Chinn, Mrs. E. J.	C. C. Hume.	Webb City.
Chinn, Mrs. E. J.	September M. Co.	Carterville.
Chinn, Mrs. E. J.	E. L. Kirrick.	Prosperity.
Cincinnati-Joplin M. Co.		Joplin.
Cincinnati-Joplin M. Co.	Stewart M. Co.	Joplin.
Cincinnati-Joplin M. Co.	C. E. W. M. Co.	Joplin.
City of Joplin.		Joplin.
City of Joplin.	Adarendack L. & Z Co.	Joplin.
Claycomb, S. H.		Baltimore, M.
Claycomb, S. H.	Geo. B. Shattlock.	Joplin.
Claycomb, S. H.	Commonwealth Mineral Co.	Joplin.
Clay's Estate		Joplin.
Clay's Estate	Parkins Zinc Co.	Zincite.
Clay's Estate	Hub Top M. Co.	Joplin.
Clay's Estate	Widner & Co.	Zincite.
Clay's Estate	Matherson & Sills.	Zincite.
Crest Z. and L. Co.		Duenweg.
Crest Z. and L. Co.	Shamrock M. Co.	Duenweg.
Crest Z. and L. Co.	Viola M. Co.	Duenweg.
Crest Z. and L. Co.	Empress M. Co.	Duenweg.
Crest Z. and L. Co.	L. C. Conlinger	Duenweg.
Crest Z. and L. Co.	J. E. & T. T. Hoofnagle.	Duenweg.
Crest Z. and L. Co.	Big Flight M. Co.	Duenweg.
Crest Z. and L. Co.	Opla M. Co.	Duenweg.
Crest Z. and L. Co.	C. S. Cox.	Duenweg.

JASPER COUNTY—Continued.

Companies.	Operators.	Postoffice.
ingham, L. P.		Joplin.
ingham, L. P.	Wm. Houk	Joplin.
ingham, L. P.	Jack Ross M. Co.	Joplin.
r. Thos.		Joplin.
r. Thos.	Alberta M. Co.	Webb City.
r. Thos.	Well So M. Co.	Webb City.
r. Thos.	Forestal O'Donald	Webb City.
r. Thos.	Crescent M. Co.	Webb City.
r. Thos.	Florence F. M. Co.	Webb City.
r. Thos.	Monticello M. Co.	Joplin.
r. Thos.	Croesus M. Co.	Webb City.
r. Thos.	Venture M. Co.	Carterville.
r. Thos.	Lima M. Co.	Lima, Ohio.
r. Thos.	Regularity M. Co.	Webb City.
r. Thos.	John Macklor	St. Louis.
r. Thos.	Katy C. M. Co.	Joplin.
r. Thos.	Anna Donohoe	Joplin.
r. Thos.	Mt. Ararat M. Co.	Webb City.
r. Thos.	Ten O'Clock M. Co.	Webb City.
r. Thos.	Plutocrat M. Co.	Webb City.
r. Thos.	Minnie R. M. Co.	Carterville.
r. Thos.	McKinley M. Co.	Joplin.
r. Thos.	Maud R. M. Co.	Webb City.
r. Thos.	Karrick & Co.	Johnstown.
r. Thos.		Joplin.
r. Thos.	Vermillion & Co.	Prosperity.
r. Thos.	Brass Ring M. Co.	Carterville.
r. Thos.	Columbia L. & Z. Co.	Webb City.
r. Thos.	Metallic M. Co.	Webb City.
ental Zinc Co.		Joplin.
ental Zinc Co.	Glendale M. Co.	Joplin.
ental Zinc Co.	Clover Leaf M. Co.	Joplin.
ental Zinc Co.	Kohinoor Zinc Co.	Joplin.
ental Zinc Co.	Jack Harward M. Co.	Joplin.
ental Zinc Co.	Sancho Panza M. Co.	Joplin.
ental Zinc Co.	Linderman Zinc Co.	Joplin.
ental Zinc Co.	Vandalla M. Co.	Joplin.
ental Zinc Co.	Dorothy M. Co.	Joplin.
ental Zinc Co.	Boston-N. Y. M. Co.	Joplin.
ental Zinc Co.	Prairie State M. Co.	Joplin.
ental Zinc Co.	Claud Thornton & Co.	Joplin.
ental Zinc Co.	Hoboken M. Co.	Joplin.
ental Zinc Co.	Imperial M. Co.	Joplin.
Geo. & Co.		Joplin.
Geo. & Co.	Indiana L. & Z. Co.	Carthage.
eror Zinc Co.		Joplin.
dated Troup M. Co.		Joplin.
dated Troup M. Co.	Kentucky-Kansas M. & M. Co.	Cincinnati, Ohio.
erty. Davy et al.		Carterville.
erty. Davy et al.	Hall & Co.	Carterville.
erty. Davy et al.	Muse & Co.	Webb City.
erty. Davy et al.	Henderson & Co.	Carterville.
erty. Davy et al.	Donahoe & Co.	Carterville.
erty. Davy et al.	Zenith Co.	Carterville.
erty. Davy et al.	Lawaarer & Co.	Carterville.
erty. Davy et al.	Amer. Z. L. & S. Co.	Carterville.
erty. Davy et al.	McCrigh & Co.	Carterville.
erty. Davy et al.	Mattie L. M. Co.	Carterville.
erty. Davy et al.	M. Hubbs	Carterville.
erty. Davy et al.	Lykin & Co.	Carterville.
erty. Davy et al.	Fulerton M. Co.	Carterville.
erty. Davy et al.	Big Hit M. Co.	Carterville.
erty. Davy et al.	Midway Consolidated M. Co.	Joplin.
erty. Davy et al.	Ralph Brooks	Carterville.
erty. Davy et al.	Jas. Roberson	Carterville.
erty. Davy et al.	W. M. Corred & Co.	Carterville.
Kate M.		Galena, Kansas.
Kate M.	Arterburn & Connelly	Joplin.
e Zinc Co.		Joplin.
e Zinc Co.	Utpian M. Co.	Joplin.
e Zinc Co.	Power M. Co.	Joplin.
e Zinc Co.	Alice H. M. Co.	Joplin.
e Zinc Co.	C. H. Sexton	Joplin.
Hon. C. E.		Oronogo.
Hon. C. E.	Old Judge M. Co.	Oronogo.
Major		Joplin.
Major	Dead Hog M. Co.	Joplin.
Land and M. Co.		Carterville.

JASPER COUNTY—Continued.

Companies.	Operators.	Postoffice.
Calumet Z. and L. Co.....	Kathryn M. Co.....	Neck City.
Calumet Z. and L. Co.....	Dolly M. Co.....	Neck City.
Calumet Z. and L. Co.....	Cole & Ingersoll.....	Neck City.
Carter, Dr. J. A.....		Carthage.
Carter, Dr. J. A.....	N. Y. & St. L. M. & Mfg. Co.	Joplin.
Carter, Dr. J. A.....	Jno. Harrington	Joplin.
Carter, Dr. J. A.....	E. Rowllins	Joplin.
Carter, Dr. J. A.....	J. Creek	Joplin.
Carter, Dr. J. A.....	H. Tilley	Joplin.
Carter, Dr. J. A.....	C. Hollywood	Joplin.
Carter, Dr. J. A.....	Thirty-Eight M. Co.....	Joplin.
Carter, Dr. J. A.....		Diamond.
Carter, Dr. J. A.....	Log Cabin M. Co.....	Duenweg.
Castle Rock M. Co.....		Joplin.
Castle Rock M. Co.....	E. B. Edes & Co.....	Joplin.
Castle Rock M. Co.....	New Highland M. Co.....	Joplin.
Cave Springs Consolidated Co..		Joplin.
Cave Springs Consolidated Co..	J. E. Raymond & Co.....	Girard, Kansas.
Cave Springs Consolidated Co..	W. C. McMillan.....	Girard, Kansas.
Center Creek M. Co.....		Webb City.
Center Creek M. Co.....	D. C. McConey.....	Webb City.
Center Creek M. Co.....	J. A. Hardy & Sons.....	Webb City.
Center Creek M. Co.....	Springs & Co.....	Webb City.
Center Creek M. Co.....	B. Smith & Co.....	Webb City.
Center Creek M. Co.....	Raymond & Co.....	Webb City.
Center Creek M. Co.....	Beasley & Co.....	Webb City.
Center Creek M. Co.....	James, Gale & Co.....	Webb City.
Center Creek M. Co.....	Good Sheperd M. Co.....	Webb City.
Center Creek M. Co.....	Williams & Co.....	Webb City.
Center Creek M. Co.....	Miami M. Co.....	Webb City.
Center Creek M. Co.....	Bell & Co.....	Webb City.
Center Creek M. Co.....	Simmons & Co.....	Webb City.
Chase, Frederick A.....		Providence, R. I.
Chase, Frederick A.....	Consolidated Jack M. Co.	Duenweg.
Chase, Frederick A.....	Deval M. Co.....	Duenweg.
Chase, Frederick A.....	Larime M. Co.....	Duenweg.
Chase, Frederick A.....	Webster Matt M. Co.....	St. Louis.
Chase, Frederick A.....	Isabelle M. Co.....	St. Louis.
Chase, Frederick A.....	Helena M. Co.....	St. Louis.
Chew, Phil., & Others.....		St. Louis.
Chew, Phil., & Others.....	Aida M. Co.....	Webb City.
Chew, Phil., & Others.....	Lee M. Co.....	Webb City.
Chew, Phil., & Others.....	Palley & Co.....	Midway.
Chew, Phil., & Others.....	Quessle K. M. Co.....	Webb City.
Chew, Phil., & Others.....	B. H. Smith & Co.....	Webb City.
Chew, Phil., & Others.....	W. H. Smith & Co.....	Webb City.
Chew, Phil., & Others.....	Mercantile M. Co.....	Webb City.
Chinn, Mrs. E. J.....		Webb City.
Chinn, Mrs. E. J.....	J. W. Aylor & Co.....	Webb City.
Chinn, Mrs. E. J.....	Eleventh Hour M. Co.....	Webb City.
Chinn, Mrs. E. J.....	Chapman M. Co.....	Joplin.
Chinn, Mrs. E. J.....	Chenoweth & Firth.....	Webb City.
Chinn, Mrs. E. J.....	Nutmeg M. Co.....	Webb City.
Chinn, Mrs. E. J.....	C. C. Hume.....	Webb City.
Chinn, Mrs. E. J.....	September M. Co.....	Cartersville.
Chinn, Mrs. E. J.....	E. L. Kirrick.....	Prosperity.
Cincinnati-Joplin M. Co.....		Joplin.
Cincinnati-Joplin M. Co.....	Stewart M. Co.....	Joplin.
Cincinnati-Joplin M. Co.....	C. E. W. M. Co.....	Joplin.
City of Joplin.....		Joplin.
City of Joplin.....	Adarondack L. & Z Co.....	Joplin.
Claycomb, S. H.....		
Claycomb, S. H.....	Geo. B. Shattrick.....	Baltimore, Md.
Claycomb, S. H.....	Commonwealth Mineral Co.....	Joplin.
Collins Estate		Joplin.
Collins Estate	Perkins Zinc Co.....	Zincite.
Collins Estate	Hill Top M. Co.....	Joplin.
Collins Estate	Widner & Co.....	Zincite.
Collins Estate	Matherson & Sills.....	Zincite.
Crown Crest Z. and L. Co.....		Duenweg.
Crown Crest Z. and L. Co.....	Shamrock M. Co.....	Duenweg.
Crown Crest Z. and L. Co.....	Viola M. Co.....	Duenweg.
Crown Crest Z. and L. Co.....	Empress M. Co.....	Duenweg.
Crown Crest Z. and L. Co.....	L. C. Conlinger	Duenweg.
Crown Crest Z. and L. Co.....	J. E. & T. T. Hoofnagle.....	Duenweg.
Crown Crest Z. and L. Co.....	Big Flight M. Co.....	Duenweg.
Crown Crest Z. and L. Co.....	Opla M. Co.....	Duenweg.
Crown Crest Z. and L. Co.....	C. S. Cox.....	Duenweg.

JASPER COUNTY—Continued.

Companies.	Operators.	Postoffice.
Eclipse Land and M. Co.....	Cornucopia M. Co.....	Webb City.
Eclipse Land and M. Co.....	May M. Co.....	Alba.
Fenner, D. R., & Lucy H.....	.....	Carthage.
Fenner, D. R., & Lucy H.....	Main St. M. Co.....	Carthage.
Fenner, D. R., & Lucy H.....	E. Hollingsworth M. Co.....	Carthage.
First National Bank & Others..	.....	Carterville.
First National Bank & Others..	G. F. Edgers & Co.....	Webb City.
First National Bank & Others..	Jos. Lewis	Webb City.
First National Bank & Others..	W. E. Moore.....	Webb City.
Fox Helrs .....	.....	Alba.
Fox Helrs	Red Fox M. Co.....	Webb City.
Fox Helrs	Good Friday M. Co.....	Alba.
Fox Helrs	Luke & Brown.....	Alba.
Fox Helrs	Teddy R. M. Co.....	Alba.
Guengerick & Others .....	.....	Joplin.
Guengerick & Others	Lymon G. Mines & M. Co....	Joplin.
Gund M. Co.....	.....	Lexington, Ky.
Gund M. Co.....	Grier M. Co.....	Webb City.
Gund M. Co.....	A. & B. Green & Co.....	Carthage.
Gund M. Co.....	Benton & Green.....	Carthage.
Gund M. Co.....	A. H. Laughead & Co.....	Carthage.
Gund M. Co.....	Line & Morgan L. & Z. M. Co.	Joplin.
Gund M. Co.....	Connell, Keller & Co.....	Carterville.
Guinn, John C.....	.....	Joplin.
Guinn, John C.....	A. E. Bendelari.....	Joplin.
Guinn, John C.....	M. C. Conkey.....	Joplin.
Guinn, John C.....	Premier L. & Z. Co.....	Webb City.
Guinn, John C.....	J. M. Kerr.....	Webb City.
Guinn, John C.....	W. W. Wampler.....	Webb City.
Guinn, John C.....	F. H. Stepp	Carterville.
Guinn, John C.....	Aaron Shubart	Webb City.
Guinn, John C.....	Thos. McCroskey	Webb City.
Guinn, John C.....	.....	Joplin.
Guinn, John C.....	Randolph M. Co.....	Joplin.
Guinn, John C.....	Ground Floor M. Co.....	Joplin.
Guinn, John C.....	Bishop & Co.....	Joplin.
Guinn, John C.....	Chicago L. & Z M. Co.....	Webb City.
Guinn, John C.....	Mercantile Metal Milling Co..	Joplin.
Guinn, John C.....	Black Cat M. Co.....	Webb City.
Guinn, John C.....	Electrical Z. and L. M. Co....	Carthage.
Gage & Co.....	.....	Diamond.
Gage & Co.....	Warmack Bros.	Prosperity.
General Zinc and Lead Co.....	.....	Joplin.
General Zinc and Lead Co.....	Robinson & Vancil.....	Joplin.
General Zinc and Lead Co.....	Patton & Dodge.....	Webb City.
General Zinc and Lead Co.....	J. G. & J. R. Warmack.....	Webb City.
Glover, C. S., & Mrs. L. Taylor	.....	Joplin.
Glover, C. S., & Mrs. L. Taylor	Cataract M. Co.....	Joplin.
Glover, C. S., & Mrs. L. Taylor	Ellicott L. & Z. Co.....	Joplin.
Glover, C. S., & Mrs. L. Taylor	Duncan, Morgan & Co.....	Joplin.
Granby M. and S. Co.....	.....	Oronogo.
Granby M. and S. Co.....	LaTosca M. Co.....	Oronogo.
Granby M. and S. Co.....	Gaddis M. Co.....	Oronogo.
Granby M. and S. Co.....	Hill Top M. Co.....	Oronogo.
Granby M. and S. Co.....	Moore & Magee.....	Carthage.
Granby M. and S. Co.....	Akron M. Co.....	Oronogo.
Granby M. and S. Co.....	Gundling M. Co.....	Oronogo.
Granby M. and S. Co.....	Ross M. Co.....	Oronogo.
Granby M. and S. Co.....	Lucky Strike	Oronogo.
Granby M. and S. Co.....	West Hill Top M. Co.....	Oronogo.
Granby M. and S. Co.....	Morning Star M. Co.....	Oronogo.
Granby M. and S. Co.....	Bunker Hill M. Co.....	Oronogo.
Granby M. and S. Co.....	.....	Joplin.
Granby M. and S. Co.....	Bay State Z. M. Co.....	Joplin.
Granby M. and S. Co.....	Amalgamated Z. & L. Co....	Joplin.
Granby M. and S. Co.....	Royal Blue M. Co.....	Joplin.
Granby M. and S. Co.....	Brancher M. Co.....	Joplin.
Granby M. and S. Co.....	Omega M. Co.....	Joplin.
Granby M. and S. Co.....	Williams M. & Milling Co....	Kansas City.
Granby M. and S. Co.....	B. & H. M. Co.....	Joplin.
Granby M. and S. Co.....	Miami M. Co.....	Joplin.
Granby M. and S. Co.....	Solitaire M. & Milling Co....	Joplin.
Granby M. and S. Co.....	J. W. Kirkbride & Priddy....	Findley, Ohio.
Granby M. and S. Co.....	Pennsylvania M. & S. Co....	Joplin.
Granby M. and S. Co.....	Cliff L. & Z. Co.....	Joplin.
Granby M. and S. Co.....	O. A. Newall.....	Joplin.
Granby M. and S. Co.....	Scott, Mooneyhouse & Co....	Joplin.
Granby M. and S. Co.....	James Roach & Co.....	Joplin.

JASPER COUNTY—Continued

Companies.	Operators.	Postoffice.
Canby M and S. Co	Chenoweth & Co.....	Joplin.
Canby M and S Co.....	W. B. Hudson	Joplin.
Canby M. and S. Co.....	Prince Henry M Co	Joplin.
Canby M and S. Co.....	A. & R. M. Co	Kansas City
Canby M. and S. Co	Ruby & Campbell.....	Joplin
Carper, N J .....	.....	.....
Carper, N J	Cottonwood M Co	Joplin.
Chackney, Mrs L M. ....	.....	Kansas City.
Chackney, Mrs L M....	Sparrow M. Co	Neck City.
Chayden, Mr. ....	.....	.....
Chayden Mr	Albatross M Co	St. Louis
Chayworth, Jerry, Trustee ..	.....	Carthage.
Chayworth, Jerry, Trustee ..	Hannum & Hayworth	Carthage.
Chayworth, Jerry, Trustee ..	O. K. M. Co.	Alba.
Chayworth, Jerry, Trustee ..	Craw Dad M Co	Alba.
Chayworth, Jas .....	.....	Alba.
Chayworth, Jas.	P. E. Hannum	Carthage
Chayworth, Jas	Hannum & Stiekney	Carthage
Chayworth, Jas.	Jno. Derby & Co	Carthage.
Chayworth Jas	Prignton & Co	Alba.
Chil, Isaac .....	.....	Hillsboro, Ill.
Chil, Isaac	Brooklyn M Co	Duenweg
Choline, Jos., & Others .....	.....	Stockton.
Choline, Jos., & Others	Willapus Walapus M. Co	Joplin.
Choline, Jos., & Others	Timons & Timons.....	Joplin.
Chomestead L. and Z Co .....	.....	St. Louis
Cowe, Mary F .....	.....	Alba.
Cowe, Mary F	Honey M Co.....	Alba.
Corton, B F. ....	.....	Carterville
Corton, B F.	Gold Bond M Co	Webb City.
Corton, B F., & Smith, Lucy K.	.....	Carterville.
Corton, B F., & Smith, Lucy K.	Mulberry M. Co	Duenweg
Corton, B F., & Smith, Lucy K.	Ruth Katherine M. Co	Duenweg
Cotton Trust Co., St. Louis.	.....	St. Louis
Cotton Trust Co., St. Louis	Hudson M Co	Carthage.
Cumphy, E. A. ....	.....	Jordan, N. Y.
Cumphy, E. A.	Pine Bluff M Co.....	Joplin.
Cwin Land & M Co. ....	.....	Milwaukee, Wis.
Cwin Land & M Co	J. W. Degginger	Joplin.
Cwin Land & M Co.	W. B. Bash & L. W. Floorman	Joplin.
Cypemling M. Co .....	.....	Carl Junction
Cypemling M. Co.	Red Bird M Co	Reeds.
John Jackson Invest. Co. ....	.....	St. Louis
John Jackson Invest Co	Katydid M Co	Joplin
John Jackson Invest Co	Joplin-Kentucky Z Co	Earlington, Ky
John Jackson Invest. Co.....	Thanksgiving Lead & Zinc Co..	St. Louis.
John Jackson Invest. Co.....	John Jackson M. Co.	Joplin.
Johnson William E .....	.....	Joplin.
Johnson, William E	Fowler & Co	Joplin.
Johnson, William E	David Moore & Co	Joplin.
Johnson, William E.	Johnson & Co.	Joplin.
Jones, L. B. ....	.....	St. Louis.
Jones, L. B.	D. P. Weems & Co	Neosho.
Jones, L. B.	Foster McConnell	Neosho.
Jones, Ruth .....	.....	Kansas City.
Jones, Ruth	Stevlson, Jones & Co	Webb City.
Jones, Ruth	Hungry Five M. Co	Webb City.
Jones, Ruth	Ela Rl M Co.....	Webb City.
Jones, Ruth	Big Four M Co.....	Webb City.
Joplin Consolidated M. Co .....	.....	Joplin.
Joplin Consolidated M. Co	Joplin Main St. M. Co.	Joplin.
Joplin Consolidated M. Co	Marshall M. Co.	Joplin.
Joplin Consolidated M. Co	Booster M. Co	Joplin.
Joplin Consolidated M Co	Parsons & Co	Joplin.
Kane, W. B. & Co. ....	.....	Carterville
Kane, W., B. & Co.....	Big Kate M. Co.....	Carthage
Kane, W., B. & Co.....	J. A. McMillan	Carthage.
Kane, W., B. & Co.....	J. L. Moore	Carthage.
Kelley & Ware .....	.....	New York, N. Y.
Kelley & Ware	Majestic M. Co	Webb City
Kelley, Albert .....	.....	New York, N Y
Kelley Albert	Orceola M. Co	Webb City
Keller, G. W. ....	.....	Joplin
Keller, G W	Geo. W. Haggerty	Joplin.
Keller, G W	Truesdale M. Co	Joplin
Kirk, S. P. ....	.....	Duenweg
Kirk, S. P.	Daniel Bragg	Duenweg
Kirk, S P	W. M. Orabood	Duenweg.

JASPER COUNTY—Continued.

Companies.	Operators.	Postoffice.
Kirk, S. P.....	C. Lamberson	Duenweg.
Kirk, S. P.....	Adam Scott	Duenweg.
Kirkbride, J. W.....	.....	Joplin.
Kirkbride, J. W.....	Kirkbride & Priddy	Findley, Ohio.
Kirkbride, J. W.....	Grace M. Co.....	Joplin.
Knight, Augustus .....	.....	.....
Knight, Augustus	Ishpeming M. Co.....	Carl Junction.
Koehler & Others .....	.....	Carthage.
Koehler & Others	Luke & Brown M. Co.....	Carthage.
Koehler & Others	Long & Co.....	Webb City.
Koehler & Others	B. M. Bailey & Co.....	Webb City.
Lanyon, R. H.....	.....	Carthage.
Lanyon, R. H.....	2nd National M. Co.....	Carthage.
Lanyon, R. H.....	R. H. Lanyon & Co.....	Carthage.
Leckie W. M.....	.....	Joplin.
Leckie W. M.....	Lowe, King & Co.....	Joplin.
Litteral, Jacob .....	.....	Cartersville.
Litteral, Jacob	Perry & Co.	Joplin.
Litteral, Jacob	Charm M. Co.....	Cartersville.
Litteral, Jacob	Argo M. Co.....	Cartersville.
Litteral, Jacob	September M. Co.....	Cartersville.
Litteral, Jacob	Quintette M. Co.....	Joplin.
Longon, Martha E.....	.....	Joplin.
Longon, Martha E.....	Edgar County M. Co.....	Joplin.
Longon, Martha E.....	Lucky 3 M. Co.....	Joplin.
Longon, Martha E.....	Mawking Bird M. Co.....	Joplin.
Longon, Martha E.....	Blue Cat M. Co.....	Zincite.
Longon, Martha E.....	Emma M. Co.....	Joplin.
Longon, Martha E.....	P. C. Campbell & Co.....	Joplin.
Luscumbe, I. T.....	.....	Carthage.
Luscumbe, I. T.....	Osage M. Co.....	Webb City.
Luscumbe, I. T.....	Fullerton M. Co.....	Cartersville.
McGregor, M. C.....	.....	Carthage.
McGregor, M. C.....	C. B. Gammon	Carthage.
McGregor, M. C.....	Amer. Z., L. & S. Co.....	Cartersville.
McIntyre, Bailey & Others.....	.....	Joplin.
McIntyre, Bailey & Others.....	Liverpool M. Co.....	Webb City.
Majestic Consol. Z. and L. Co.....	.....	Webb City.
Martin, Thos. H. & Others.....	.....	Kansas City.
Martin, Thos. H. & Others.....	Bradford-K. C. M. Co.....	Kansas City.
Mitchell & Co.....	.....	Carthage.
Mitchell & Co.....	Bix Six Development Co.....	Carthage.
Mitchell & Co.....	Fairview M. Co.....	Carthage.
Mitchell & Co.....	Jupiter M. Co.....	Carthage.
Mitchell & Co.....	S. D. Mitchell	Carthage.
Mitchell, S. H.....	.....	Carthage.
Mitchell, S. H.....	Utility M. Co.....	Joplin.
Mitchell, S. H.....	Hoosier M. Co.....	Joplin.
Miller, Robt., & Charity.....	.....	Webb City.
Miller, Robt., & Charity.....	Independence Z. M. Co.....	Joplin.
Missouri L. and Z. Co.....	.....	Joplin.
Moody, Campbell & Co.....	.....	Kansas City.
Moody, Campbell & Co.....	Top Run M. Co.....	Joplin.
Moody, Campbell & Co.....	Smith & Shipman.....	Joplin.
Montgomery L. and Z. Co.....	.....	Pottstown, Pa.
Montgomery L. and Z. Co.....	Clinton M. Co.....	Joplin.
Montgomery L. and Z. Co.....	Reack & Donnan.....	Joplin.
Montgomery L. and Z. Co.....	Chas. Glover	Joplin.
Montgomery L. and Z. Co.....	Jim Perry	Joplin.
Montgomery L. and Z. Co.....	Rader Mine	Joplin.
Montgomery L. and Z. Co.....	Tonnies Mine	Joplin.
Montgomery L. and Z. Co.....	Hill & Yarco Mine.....	Joplin.
Montgomery L. and Z. Co.....	Corbus Mine	Joplin.
Montgomery L. and Z. Co.....	Butrum Mine	Joplin.
Missouri Trust Co.....	.....	St. Louis.
Missouri Trust Co.....	Harrison M. Co.....	Joplin.
Moss Back M. Co.....	.....	Joplin.
Moss Back M. Co.....	Rob Roy Zinc M. Co.....	Joplin.
Muncie Land and M. Co.....	.....	Joplin.
Muncie Land and M. Co.....	Smith & Myers.....	Joplin.
Musselman, H. ....	.....	Joplin.
Musselman, H.	Reliance M. Co.....	Webb City.
Murphy & Connor.....	.....	Joplin.
Murphy & Connor.....	Calmel M. Co.....	Joplin.
Murphy & Connor.....	Bounle B. M. Co.....	Joplin.
Murphy & Connor.....	Halden & Co.....	Joplin.
Murphy & Connor.....	Busy Bee M. Co.....	Joplin.
Murphy & Connor.....	Blue Pigeon M. Co.....	Joplin.

JASPER COUNTY—Continued.

Companies.	Operators.	Postoffice.
by & Connor.....	Irish M. Co.....	Joplin.
by & Connor.....	Sultana M. Co.....	Joplin.
by Heirs	Howard Murphy	Joplin.
by Heirs	Clymer & Co.....	Joplin.
uri Zinc Fields Co.....	.....	Webb City.
uri Zinc Fields Co.....	A. W. Broam & Co.....	Webb City.
uri Zinc Fields Co.....	Viola M. Co.....	Webb City.
uri Zinc Fields Co.....	Chas. W. Evans.....	Webb City.
uri Zinc Fields Co.....	L. C. Bell & Co.....	Webb City.
uri Zinc Fields Co.....	Carmean & Canada M. Co.....	Carthage.
uri Zinc Fields Co.....	Warrington M. Co.....	Webb City.
uri Zinc Fields Co.....	Bulah M. Co.....	Webb City.
uri Zinc Fields Co.....	Duluth Zinc Co.....	Duluth, Mich.
uri Zinc Fields Co.....	H. Seay	Webb City.
uri Zinc Fields Co.....	Childs & Co.....	Webb City.
uri Zinc Fields Co.....	Mary Louise M. Co.....	Webb City.
uri Zinc Fields Co.....	Scioto Zinc Co.....	Webb City.
uri Zinc Fields Co.....	South Forty M. Co.....	Webb City.
uri Zinc Fields Co.....	Tripple Link M. Co.....	Webb City.
uri Zinc Fields Co.....	Henson & Co.....	Carterville.
uri Zinc Fields Co.....	Bowhard Mine	Webb City.
uri Zinc Fields Co.....	Wright M. Co.....	Carterville.
uri Zinc Fields Co.....	Wise Guy M. Co.....	Joplin.
on, Briggs & Others.....	.....	Louisville Ky.
on, Briggs & Others.....	Dinkelbeihler Lease	Joplin.
on, Briggs & Others.....	The Par Value M. Co.....	Cincinnati, Ohio.
on, Briggs & Others.....	W. L. Aaron Co.....	Joplin.
on, Briggs & Others.....	The Carnegie Galena Co.....	Cincinnati, Ohio.
on, Briggs & Others.....	The Ivanhoe M. Co.....	Cincinnati, Ohio.
on, Briggs & Others.....	Germania M. Co.....	Cincinnati, Ohio.
on, Briggs & Others.....	Louis Gust & Co.....	Joplin.
on, Briggs & Others.....	Dead Broke M. Co.....	Joplin.
on, Briggs & Others.....	The Fred. H. Rodgers & Co...	Joplin.
on, Briggs & Others.....	The Jewell M. Co.....	Joplin.
on, Judge E. H.....	.....	Patt. City.
on, Judge E. H.....	Boqua M. Co.....	Joplin.
on, Judge E. H.....	Anderson M. Co.....	Mexico.
efe, E. ....	.....	Carthage.
efe, E.	Holden Ihlseng & Thomas.....	Joplin.
efe, E.	W. J. Kerns.....	Webb City.
efe, E.	W. L. Danna.....	Pittsburg, Kas.
efe, E.	Ed. Chapman	Webb City.
efe, E.	Massasoit L. and Z. Co.....	Joplin.
efe, E.	W. S. Brown.....	Joplin.
efe, E.	Sherman Grattis	Joplin.
efe, E.	Geo. H. Ritter.....	Joplin.
efe, E.	Julius Kirn	Joplin.
efe, E.	J. D. Coates.....	Joplin.
efe, E.	Nathan Cogle	Joplin.
efe, E.	Henry Milam	Joplin.
efe, E.	Geo. Shaffer	Joplin.
efe, E.	E. O. Bartlett.....	Joplin.
efe, E.	Shamrock M. Co.....	Joplin.
olony Z. and S. Co.....	.....	Boston, Mass.
olony Z. and S. Co.....	Tom Jackson, Supt.....	Joplin.
sboro-Joplin M. Co.....	.....	Joplin.
sboro-Joplin M. Co.....	Fourth of July M. Co.....	Joplin.
sboro-Joplin M. Co.....	Frank Brown	Joplin.
ll & Connor.....	.....	Joplin.
ll & Connor.....	Leddy M. Lease.....	Central City.
os, Burch & Others.....	.....	Carthage.
os, Burch & Others.....	Obert M. Co.....	Joplin.
os, Burch & Others.....	A. E. Anderson.....	Carterville.
os, Burch & Others.....	T. P. Burnes.....	Carterville.
os, Burch & Others.....	E. L. Jalce.....	Carterville.
os, Burch & Others.....	J. Mamon	Carterville.
os, Burch & Others.....	J. S. Evans.....	Carterville.
os, Burch & Others.....	A. E. Buttehelm.....	Carterville.
os, Burch & Others.....	A. W. Baker.....	Carterville.
os, Burch & Others.....	F. Garretty	Carterville.
os, Burch & Others.....	E. A. Calaspath.....	Carterville.
os, Burch & Others.....	C. L. Jalce.....	Carterville.
er Lead Co.....	.....	Joplin.
er Lead Co.....	C. O. Frye.....	Tulsa, I. T.
burg-Joplin L. and Z. Co..	.....	Carthage.
burg-Joplin L. and Z. Co..	Ora May M. Co.....	Joplin.
burg-Joplin L. and Z. Co..	Mary Ann M. Co.....	Joplin.

JASPER COUNTY—Continued.

Companies.	Operators.	Parties.
Pittsburg-Joplin L. and Z. Co..	Sam Hill M. Co.....	Joplin.
Pittsburg-Joplin L. and Z. Co..	Cotton Tail M. Co.....	Joplin.
Pittsburg-Joplin L. and Z. Co..	Last Chance M. Co.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	Condor L. & Z. Co.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	Holms, Cape & Rodgers.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	Holy Smoke M. Co.....	Carthage.
Pittsburg-Missouri Z. & L. Co.	S. & B. M. Co.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	Mabel M. Co.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	Bunker Hill M. Co.....	Webb City.
Pittsburg-Missouri Z. & L. Co.	Jack Rose Z. and L. Co.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	Chitwood Z. and L. Co.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	Mandarin M. Co.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	Quaker M. Co.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	Preble M. Co.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	Helen Z. and L. Co.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	West Joplin L., Z. Co.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	John M. Agyle.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	Wilgus & Harrison.....	Joplin.
Pittsburg-Missouri Z. & L. Co.	Conqueror Zinc Cos.....	Joplin.
Porter, F. D., & Others.....	.....	Carthage.
Porter, F. D., & Others.....	First Natl. M. Co.....	Carthage.
Porter, F. D., & Others.....	Miami M. Co.....	Cartersville.
Porter, F. D., & Others.....	Millard M. Co.....	Cartersville.
Porter, F. D., & Others.....	Womack & Mosley.....	Cartersville.
Porter, F. D., & Others.....	Earl P. M. Co.....	Cartersville.
Porter Realty Co.....	.....	Joplin.
Porter Realty Co.....	J. W. McDonald & Co.....	Joplin.
Porter Realty Co.....	Bert Snow & B. A. Reese.....	Joplin.
Porter Realty Co.....	Cripps, Taylor & Kelley.....	Joplin.
Porter Realty Co.....	B. B. Blume.....	Joplin.
Porter Realty Co.....	Dorsey & Co.....	Joplin.
Barney Pullman M. Co.....	.....	Joplin.
Barney Pullman M. Co.....	Thos. Hill	Joplin.
Rabbit Foot Z. M. Co.....	.....	New York, N.
Rabbit Foot Z. M. Co.....	W. E. Kingsbury, Supt.....	Joplin.
Rees & Kane.....	.....	Webb City.
Rees & Kane.....	Mistletoe M. Co.....	Cartersville.
Rees & Kane.....	Big Kate M. Co.....	Carthage.
Reliance M. Co.....	.....	Webb City.
Reliance M. Co.....	Express Z. and L. Co.....	Neck City.
Reliance M. Co.....	Durby-Bryant M. Co.....	Cartersville.
Reliance M. Co.....	Chapman & Lennan.....	Joplin.
Reliance M. Co.....	Bert Holcom	Neck City.
Reliance M. Co.....	Diamond Prosperity Co.....	Webb City.
Reliance M. Co.....	D. T. Springs.....	Webb City.
Reliance M. Co.....	John Dermott	Neck City.
Reliance M. Co.....	Express L. and Z. Co.....	Neck City.
Reliance M. Co.....	Durby-Bryant M. Co.....	Cartersville.
Reliance M. Co.....	Bert Holcomb	Neck City.
Reliance M. Co.....	Diamond Prosperity Co.....	Webb City.
Reliance M. Co.....	D. T. Springs.....	Webb City.
Reliance M. Co.....	John Dermott	Webb City.
Reliance M. Co.....	Chapman & Lennan.....	Joplin.
Reliance M. Co.....	.....	Joplin.
Reliance M. Co.....	Sycamore M. Co.....	Joplin.
Reliance M. Co.....	Ashen & Co.....	Joplin.
Reliance M. Co.....	Pearson & Co.....	Joplin.
Reliance M. Co.....	Dunham & Co.....	Joplin.
Reliance M. Co.....	Thomas & Co.....	Joplin.
Reliance M. Co.....	Carney & Co.....	Joplin.
Reliance M. Co.....	Cole & Co.....	Joplin.
Reliance M. Co.....	Hewit & Co.....	Joplin.
Reliance M. Co.....	.....	Carthage.
Reliance M. Co.....	Neely M. Co.....	Reeds.
Reliance M. Co.....	McGorran & Co.....	Reeds.
Reliance M. Co.....	J. Binseyer	Sarcoile.
Reliance M. Co.....	C. B. Baldwin.....	Paducah, Ky
Reliance M. Co.....	B. F. Ford.....	Carthage.
Reliance M. Co.....	E. E. Mamis.....	Sarcoile.
Reliance M. Co.....	.....	Joplin.
Reliance M. Co.....	A. No. 1 Mining Co.....	Joplin.
Reliance M. Co.....	Keystone M. Co.....	Joplin.
Reliance M. Co.....	Tuttle M. Co.....	Joplin.
Reliance M. Co.....	Ought To Mining Co.....	Joplin.
Reliance M. Co.....	Peach Tree M. Co.....	Joplin.
Reliance M. Co.....	.....	Joplin.
Reliance M. Co.....	Myers & Co.....	Joplin.

JASPER COUNTY—Continued.

Companies.	Operators.	Postoffice.
Schefferdecker, Chas. ....	.....	Joplin.
Schefferdecker, Chas.	Buffalo L. and Z. Co.	Buffalo, N. Y.
Schefferdecker, Chas.	Kansas City-Joplin M. Co.	Joplin.
Sadler L. and Z. Co. ....	.....	Philadelphia, Pa.
Sadler L. and Z. Co.	Cox M. Co.	Duenweg.
Stewart, J. C. ....	.....	Webb City.
Stewart, J. C.	West Alba M. Co.	Webb City.
Scranton M. and S. Co. ....	.....	Joplin.
Shoemaker, E. B. ....	.....	Joplin.
Shoemaker, E. B.	Bumble Bee M. Co.	Joplin.
Smith, Wm. J. ....	.....	Kansas City.
Smith, Wm. J.	Winebago M. Co.	Joplin.
Smith, Wm. J.	Wyatt & Williams.	Joplin.
Smith, Wm. J.	Burge & McCowan.	Joplin.
Smith, Wm. J.	John Nichols.	Joplin.
Smith, Wm. J.	S. & C. McCorkle.	Joplin.
Smith, Wm. J.	Smith & Stickney M. Co.	Carthage.
Smith, Wm. J.	W. H. Scott M. Co.	Webb City.
Smith, Wm. J.	Wm. Cozad M. Co.	Webb City.
Smith, Wm. J.	Chas. Hawk M. Co.	Carl Junction.
Smith, Wm. J.	Thos. Baumet.	Carl Junction.
Smith, Wm. J.	L. Thomas Electric.	Carthage.
Smith, Jeremiah Heirs. ....	.....	Carl Junction.
Smith, Jeremiah Heirs.	DeGarmo M. Co.	Carl Junction.
Smith, Jeremiah Heirs.	Ellis & Co.	Carl Junction.
Smith, Jeremiah Heirs.	Johnson & Co.	Carl Junction.
Smith, Jeremiah Heirs.	House & Co.	Carl Junction.
Smith, Jeremiah Heirs.	T. Rice.	Carl Junction.
Smith, Jeremiah Heirs.	Brunnet.	Carl Junction.
Smith, Jeremiah Heirs.	Hall Best.	Carl Junction.
Smith, Jeremiah Heirs.	Flock & Co.	Carl Junction.
Spencer, Corwin H. ....	.....	St. Louis.
Spencer, Corwin H.	Crawfish M. Co.	Joplin.
Spencer, Corwin H.	East Alba M. Co.	Carthage.
Spencer, Corwin H.	F. M. Sponable.	Alba.
South Joplin L. and Z. M. Co. ....	.....	Joplin.
South Joplin L. and Z. M. Co.	Magnolia M. Co.	Joplin.
South Joplin L. and Z. M. Co.	Ruthalta M. Co.	Joplin.
South Joplin L. and Z. M. Co.	Honor & Co.	Joplin.
South Joplin L. and Z. M. Co.	McEdith M. Co.	Joplin.
South Joplin L. and Z. M. Co.	Wing & Co.	Joplin.
South Joplin L. and Z. M. Co.	M. H. & K. M. Co.	Joplin.
Sully, E. R. ....	.....	.....
Sully, E. R.	Spinx M. Co.	Neck City.
Swartz Land. ....	.....	.....
Swartz Land.	E. A. Morris.	Joplin.
Swartz Land.	C. W. McAbee & Co.	Joplin.
Taylor John H. Estate. ....	.....	Joplin.
Taylor John H. Estate.	Mattes Bros.	Joplin.
Taylor John H. Estate.	John Lee.	Smelter Hill.
Taylor & Glover. ....	.....	Joplin.
Taylor & Glover.	Ellicott Z. and L. Co.	Chitwood.
Taylor, Mrs. Lulle. ....	.....	Joplin.
Taylor, Mrs. Lulle.	Olive M. Co.	Joplin.
Thompson, L., Heirs. ....	.....	Joplin.
Thompson, L., Heirs.	Clark & Painter M. Co.	Joplin.
Thompson, L., Heirs.	Cramble & Co.	Joplin.
Thompson, L., Heirs.	K. Johnston & Co.	Joplin.
United Zinc Cos. ....	.....	Joplin.
United Zinc Cos.	The Conqueror L. and Z. Co.	Joplin.
United Zinc Cos.	King & Queen M. Co.	Joplin.
United Zinc Cos.	B. M. & M. P. Robinson.	Joplin.
United Zinc Cos.	Balllam & Bolln.	Joplin.
United Zinc Cos.	Welton M. Co.	Joplin.
United Zinc Cos.	Aaron DeGross.	Joplin.
United Zinc Cos.	Olympia Z. Co.	Joplin.
United Zinc Cos.	Highland M. Co.	Duenweg.
Underwriters Land Co. ....	.....	Carthage.
Underwriters Land Co. ....	.....	.....
Venango Royalty Co. ....	.....	Carthage.
Venango Royalty Co.	Penn Zinc Co.	Carthage.
Venango Royalty Co.	Williams Larkin & Co.	Neck City.
Venango Royalty Co.	Leatherneck Co.	Carthage.
Venango Royalty Co.	Rubberneck Co.	Carthage.
Venango Royalty Co.	Smith & Tamblyn.	Joplin.
Wallace & Tangner Heirs. ....	.....	Carthage.
Wallace & Tangner Heirs.	Hay Seed M. Co.	Joplin.

JASPER COUNTY—Continued.

Companies.	Operators.	Postoffice.
Wallace & Tangner Heirs.....	Howes Morris	Joplin.
Wallace & Tangner Heirs.....	Fred M. Webber.....	Joplin.
Webster Elmer .....	.....	Joplin.
Webster Elmer	Mutual M. Co.....	Joplin.
What Cheer Z. Co.....	.....	Providence, R. I.
What Cheer Z. Co.....	Boston Get There Z. Co.....	Joplin.
What Cheer Z. Co.....	Southwestern M. and Devel. Co.	Joplin.
What Cheer Z. Co.....	New Atlas M. Co.....	Joplin.
Wheeler, J. ....	.....	Alba.
Wheeler, J.	Battle Axe	Carterville.
Wheeler, J.	H. B. H. M. Co.....	Carterville.
Wheeler, J.	M. L. Harden.....	Carterville.
Weyman, Henry .....	.....	Joplin.
Weyman, Henry	Geo. Luerwick & Co.....	Joplin.
Wyssbrod, E. V.....	.....	Joplin.
Wyssbrod, E. V.....	East Hollow M. Co.....	Joplin.
Young, C. B., & Others.....	.....	Joplin.
Young, C. B., & Others.....	M. M. & S. M. Co.....	Joplin.
Young, C. B., & Others.....	Daisy Belle M. Co.....	Joplin.
Young, C. B., & Others.....	Seven Devils M. Co.....	Zincite.
Young, C. B., & Others.....	Liberty Bell M. Co.....	Joplin.
Young & Creller.....	.....	Joplin.
Young & Creller.....	Excelsior Z. and L. Co.....	Joplin.
Young & Creller.....	Harvey P. Pears.....	Joplin.
Young & Creller.....	P. C. Campbell.....	Joplin.

NEWTON COUNTY.

American Tripoli Co.....	.....	Seneca.
Bale, F. D.....	.....	Joplin.
Bucklin, H. E.....	.....	Chicago.
Bucklin, H. E.....	Big Eureka M. Co.....	Spurgeon.
Bucklin, H. E., & Willis, W. G.	Knoxall M. Co.....	Spurgeon.
Bucklin, H. E., & Willis, W. G.	Cora Jenette M. Co.....	Spurgeon.
Bucklin, H. E., & Willis, W. G.	Hub M. Co.....	Spurgeon.
Bucklin, H. E., & Willis, W. G.	Roaring Glimlet M. Co.....	Spurgeon.
Bucklin, H. E., & Willis, W. G.	Smith & Jones Mine.....	Spurgeon.
Bucklin, H. E., & Willis, W. G.	Boar Coon Mine.....	Spurgeon.
Clark, Reding & Co.....	.....	Joplin.
Clark, Reding & Co.....	South Shoal Creek M. Co.....	Joplin.
Clark, Reding & Co.....	Nemo M. Co.....	Joplin.
Clark, Reding & Co.....	Clark & Co.....	Joplin.
Dillworth, R. F.....	.....	Joplin.
Dillworth, R. F.....	Geo. A. Warren & Co.....	Joplin.
Ellis, J. W.....	.....	Diamond.
Empire Z. Co.....	.....	Joplin.
Empire Z. Co.....	Home M. Co.....	Joplin.
Freeman, J. W.....	.....	Joplin.
Freeman, J. W.....	Shoal Creek M. Co.....	Joplin.
Freeman, J. W.....	Reding & Co.....	Joplin.
Freeman, J. W.....	McClelland & Co.....	Joplin.
Freeman, J. W.....	Frank Sowders & Co.....	Joplin.
Gilt Edge M. Co.....	.....	Diamond.
Gregg, H. H.....	.....	Joplin.
Granby M. and S. Co.....	.....	Granby.
Granby M. and S. Co.....	Pennsylvania M. and S. Co....	Granby.
Granby M. and S. Co.....	Wyoming M. and M. Co.....	Granby.
Granby M. and S. Co.....	Mears M. Co.....	Granby.
Granby M. and S. Co.....	Little Boss M. Co.....	Granby.
Granby M. and S. Co.....	Wm. B. Parker.....	Spurgeon.
Granby M. and S. Co.....	Parker & Coates.....	Spurgeon.
Granby M. and S. Co.....	Estewawa M. Co.....	Joplin.
Granby M. and S. Co.....	M. & R. M. Co.....	Joplin.
Gregg, H. H.....	.....	Joplin.
Gregg, H. H.....	Leddy & Joseph.....	Joplin.
Howard M. Co.....	.....	Carthage.
Howard M. Co.....	Geo. E. Moore.....	Monticello, Ill.
Olson, E. J.....	.....	Neosho.
Olson, E. J.....	Watson & Co.....	Joplin.
Rich, Sol V.....	.....	Joplin.
St. Paul M. Co.....	.....	Joplin.
Sagino L. and Z. Co.....	.....	Neosho.
United Zinc Cos.....	.....	Joplin.

NEWTON COUNTY—Continued.

Companies.	Operators.	Pestoffice.
s, L. F.....	.....	Joplin.
ol V.....	.....	Joplin.
ol V.....	C. O. Frye & Co.....	Joplin.
ol V.....	Corbin & Reed.....	Joplin.
ol V.....	Pardue & Co.....	Joplin.
ol V.....	Busick & Co.....	Joplin.
ol V.....	T. B. Minor & Co.....	Joplin.
ol V.....	Owen & Co.....	Joplin.
ol V.....	Moore Pittes & Co.....	Joplin.
ol V.....	Bert Minor M. Co.....	Joplin.

LAWRENCE COUNTY.

Aurora Z. Co.....	.....	Aurora.
Aurora Z. Co.....	Mystle, J., M. Co.....	Joplin.
Aurora Z. Co.....	Loy & Tooker.....	Aurora.
Aurora Z. Co.....	Banks & Co.....	Aurora.
Aurora Z. Co.....	McCullough, Maxwell & Loy..	Aurora.
Aurora Z. Co.....	No. 3 M. Co.....	Aurora.
.. Mineral Land Co.....	.....	Aurora.
.. Mineral Land Co.....	South Bonanza M. Co.....	Aurora.
.. Mineral Land Co.....	Persimmon M. Co.....	Aurora.
.. Mineral Land Co.....	S. Salztts & Co.....	Aurora.
.. Mineral Land Co.....	E. J. Humphrey.....	Aurora.
.. Mineral Land Co.....	Hinkler & Co.....	Aurora.
.. Mineral Land Co.....	C. G. Thompson.....	Aurora.
.. Mineral Land Co.....	J. W. Ritter.....	Aurora.
.. L. and Z. Co.....	.....	Decatur, Ill.
.. L. and Z. Co.....	Nels, Reynolds & Co.....	Aurora.
.. McLain & Jones.....	.....	Springfield.
sy M. Co.....	.....	Aurora.
sy M. Co.....	Quaker M. Co.....	Aurora.
sy M. Co.....	Allen M. and M. Co.....	Aurora.
sy M. Co.....	Morgan & Co.....	Aurora.
.. J.....	.....	Aurora.
.. J.....	Sebrun Bros.	Aurora.
r-Weed . ....	.....	Cleveland, Ohio.
r-Weed	Uncle Sam M. Co.....	Aurora.
n M. Co.....	.....	Aurora.
& Fisher.....	.....	Chicago, Ill.
& Fisher.....	Scott, Coleman & Co.....	Aurora.
r, John, Trustee.....	.....	Easton, Pa.
r, John, Trustee.....	C. F. Johnson & Co.....	Aurora.
r, John, Trustee.....	St. Louis-Aurora M. Co.....	Aurora.
Hill M. Co.....	.....	Aurora.
in, J. W.....	.....	Venita, I. T.
in, J. W.....	J. B. Davis.....	Aurora.
leirs .....	.....	Stott City.
leirs.....	Mt. Vernon M. Co.....	Mt. Vernon.
leirs	H. F. McFarlane.....	Stott City.
leirs	Stott City M. Co.....	Stott City.
leirs	Illinois M. Co.....	Taylorville, Ill.
leirs	Jula West M. Co.....	Taylorville, Ill.
leirs	Stephen Reed M. Co.....	Stott City.
leirs	Thos. S. Waddell.....	Stott City.
Etta H.....	.....	Joplin.
Etta H.....	Clark Craycroft	Joplin.
Etta H.....	DeMasters & Co.....	Aurora.
Etta H.....	Hymer & Co.....	Aurora.
Etta H.....	Mitchell & Co.....	Aurora.
Etta H.....	Cummens & Co.....	Aurora.
Etta H.....	Russell & Co.....	Aurora.
Etta H.....	Ashworth & Co.....	Aurora.
Haute M. Co.....	.....	Terre Haute, Ind.
Haute M. Co.....	Spelteril M. Co.....	Aurora.
Haute M. Co.....	Reynolds & Co.....	Aurora.
Zinc Co.....	.....	Aurora.
Zinc Co.....	C. C. Plank.....	Aurora.

GREENE COUNTY.

Companies.	Operators.	Postoffice.
Duncan, J. K. P.....	.....	Ashgrove.
Duncan, J. K. P.....	Ash Grove Land and M. Co...	Kansas City.
Duncan, J. K. P.....	Taylor & Company.....	Ash Grove.
Daisy M. and Milling Co.....	Springfield.
Waverly M. Co.....	Springfield.

CHRISTIAN COUNTY.

Frisco Ore M. Co.....	West Plains.
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BARRY COUNTY.

Johnson & McGuffies.....	Aurora.
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BUREAU OF MINES AND MINE INSPECTION— 1905.

The Bureau, as organized under above date, has its main office, the law directs, at the State Capitol, at Jefferson City, Mo.

The Inspectors are as follows:

FOR THE EASTERN DISTRICT.

George K. Williams, inspector, appointed August 3, 1900.

FOR THE WESTERN DISTRICT.

Walter Ragland, inspector, appointed March 18, 1905.

FOR COAL MINES.

Richard Thomas, inspector, appointed January 20, 1905.

Henry J. Hamil, assistant inspector, appointed May 8, 1905.

SECRETARY OF THE BUREAU.

J. W. Marsteller, Jefferson City, Mo.

COAL REPORT.

1904, added to our output from other mines, very nearly pulled us to the figures of our greatest production. The product for the year 1903 was 4,265,328 tons, while for the year 1904 we mined 4,241,912 tons, leaving a difference of but 23,416 tons. The value of the coal mined in 1904, however, shows a decided increase over 1903, the value of the year's product being \$7,003,078, as against \$6,730,519 for 1903, an increase of \$272,559, or 3.88 per cent.

This report shows 302 mines, large and small, operated during the year, in which were employed on an average through winter and summer 10,133 men, miners and others. The miners consumed in their work 125,275 kegs of powder, which cost them \$249,953. Considering that only about half of the miners use powder, it looks like a good percentage on the cost of mining. The year 1904 has been singularly free from serious interruption by reason of strikes or other disturbing elements.

The year 1905 will show it is to be hoped by far the best year in the mining history of the State, both as to production and value. More mines will be reported and much improvement in and about them.

Mr. R. S. Thomas, Inspector, and Mr. Henry J. Hamil, Assistant Inspector, newly appointed, furnish every evidence of fitness, energy and adaptation to their duties. The promise is that the 1905 report will be out in good time, and all essential features concerning our mines cared for in an impartial way.

COAL REPORT.

The coal trade for the year 1904, in the bituminous coal-producing states, suffered loss when compared with the output of 1903. While the general business of the entire country was most excellent, still there was a decline in the output and demand for coal; this led those affected by this seemingly paradoxical condition of affairs to look about for the cause. The concensus of opinion by those best qualified to formulate an opinion furnishes two reasons. The first and most important being the result growing out of the prolonged strike which existed in the anthracite regions. Cutting of the immense supply of this coal annually furnished the market caused a demand upon the bituminous product which was not only unexpected, but in much greater quantity than had at any time heretofore been experienced. The unusual demand from the East upon our bordering coal-producing states resulted in the creation of a stronger demand in our State. The second reason given was the current belief on the part of railroad companies and large manufacturing concerns that the miners in the bituminous field would certainly go out on a strike in the spring of 1904. This caused large purchases of coal on the part of the industries mentioned. The strike among the anthracite miners being broken, the unusual demand for bituminous coal ceased. Then the large bodies of coal in stock had first to be exhausted before additional purchases were made. This left the coal trade for the year 1904 very short on orders for some time, and so far as the stimulated trade resulting from the anthracite strike was concerned, it was lost to us altogether. In general, these conditions eventuated in a very depressed market, in the face of which prices, however, were well maintained. This State was fortunate in the end, owing to conditions, however, foreign to those mentioned in the showing made of its output. The large loss in production we would have had to record was nearly offset by the work of our new Coal Mine Inspector, Mr. Richard S. Thomas, who secured a production from Platte county, Missouri, which had for some years been lost to our State. He uncovered the fact that much coal mined in Missouri was being conveyed at a depth of 700 feet *under the Missouri river* and hoisted out of a shaft located in Kansas, *which went to swell the production in that state.* This production for

of their danger in due time. Another was killed in an adjoining room to the one he was working, while still another victim, and making the seventh, was a farmer and working in his own mine. The assistant shot-firer was killed by a shot that was so placed that when he fired, it blew through a pillar and killed him. There were three killed by powder explosion, while loading cartridges. Everyone of these fatalities may be said to have resulted from carelessness. Run down the list of accidents in the table herewith and note the names; see what a large percentage of them differ from the names at one time found on the list of our miners.

Shot-firers have been employed in the mines of this State for years, and we believe with excellent results. While we cannot locate an instance during the year of any great saving of life by reason of their employment in our mines, still the avoidance of a calamity such as did occur in another state was provided against by our State, while the other states did not.

Coal dust explosions are no longer looked upon as a theory, but a veritable fact, conclusively settled in the minds of those who have furnished the practical tests. We feel it therefore but prudent to call attention to this very important feature in coal mine management, in order that those who have heretofore regarded the matter with indifference, because of the widely divergent opinions on the subject. Take no chances where your mines are dusty and dry, by reason of the fact that coal dust explosions have been considered a mooted question, but provide the necessary prevention. Your mine may not be a very gaseous one, but if you have dust, remember that under the prevailing methods of substituting powder for practical mining, that a windy or blown out shot prepared by an inexperienced miner may find the conditions favorable for a dust explosion. The question as to the speed of a fan while shot-firing is in progress, is another feature worthy of attention, and will be taken up in our next report. In the meantime the best information leads us to advise that the speed of the fan be lessened while shot-firing is engaged in.

"The use of electricity in gaseous mines is considered dangerous, but not so in non-gaseous mines. The wires furnishing motive power are at the roof where gases accumulate. The reel of the motor may emit a spark at any time, and unless the dangerous gases are removed by efficient ventilation, the danger of an explosion is great."

FATAL ACCIDENTS BY COUNTIES.

ADAIR COUNTY.

Tony Konyer, an Austrian by birth, and a miner by occupation, was killed in mine No. 7 of the Manufacturers' Coal and Coke Co., August 26, 1904. The deceased was 37 years of age and understood to be a married man, but whether or not he had any children there is no definite information. The evidence at the coroner's inquest went to show that the man at the time of the accident was engaged in turning a room off of an entry. It was also shown that he was made aware of the loose draw slate above him, but failing to properly timber it, the loose rock fell on him with the result above stated. The verdict of the coroner's jury was simply that "Tony Konyer came to his death by the falling of a rock in the fourth east entry off of the north side of the shaft." A most indefinite and anything but lucid verdict in view of the evidence adduced. It fails to find whether deceased was aware of the loose condition of the rock, the fall of which caused his death, or whether there was any contributory negligence on his part.

Frank Volik, miner employed by the Kansas City Midland Coal and M. Co. at mine No. 2 of said company, near Novinger, was killed in the mine April 18, 1904. Deceased was 27 years of age, married, and had one child. The evidence before the coroner's jury tended to show that Volik was temporarily helping Charles Blacksmith, shot-firer, to fire some shots, in the absence of the latter's regular partner, and that both went into room No. 2, where three shots were set. Blacksmith lighted two shots in the face of No. 2 room and Volik one in the cross cut of the room. Both then went into the next room where two more shots were lit, one by each. They started to leave, Volik leading, when the shot in the cross cut mentioned went off and blew through the pillar, about eight feet in thickness, separating the rooms, the flying fragments and displaced timbers killing Volik, who was in front, and slightly injuring his companion. Blacksmith said he was not aware that a shot had been lighted in the cross cut by Volik, or he would not have started to leave so soon. It was the opinion of one of the miners that the hole had been drilled too deep, or the charge would have gone in another direction. The victim of the accident was regarded as a good, practical man, but had not been long in the employ of the company. *The verdict of the coroner's jury was that "Frank Volik came to his*

JASPER COUNTY—Continued.

Companies.	Operators.	Postoffice.
Wallace & Tangner Helrs.....	Howes Morris	Joplin.
Wallace & Tangner Helrs.....	Fred M. Webber.....	Joplin.
Webster Elmer .....	.....	Joplin.
Webster Elmer	Mutual M. Co.....	Joplin.
What Cheer Z. Co.....	.....	Providence, R. I.
What Cheer Z. Co.....	Boston Get There Z. Co.....	Joplin.
What Cheer Z. Co.....	Southwestern M. and Devel. Co.	Joplin.
What Cheer Z. Co.....	New Atlas M. Co.....	Joplin.
Wheeler, J. ....	.....	Alba.
Wheeler, J.	Battle Axe	Carterville.
Wheeler, J.	H. B. H. M. Co.....	Carterville.
Wheeler, J.	M. L. Harden.....	Carterville.
Weyman, Henry .....	.....	Joplin.
Weyman, Henry	Geo. Luerwick & Co.....	Joplin.
Wyssbrod, E. V.....	.....	Joplin.
Wyssbrod, E. V.....	East Hollow M. Co.....	Joplin.
Young, C. B., & Others.....	.....	Joplin.
Young, C. B., & Others.....	M. M. & S. M. Co.....	Joplin.
Young, C. B., & Others.....	Daisy Belle M. Co.....	Joplin.
Young, C. B., & Others.....	Seven Devils M. Co.....	Zincite.
Young, C. B., & Others.....	Liberty Bell M. Co.....	Joplin.
Young & Creller.....	.....	Joplin.
Young & Creller.....	Excelsior Z. and L. Co.....	Joplin.
Young & Creller.....	Harvey P. Pears.....	Joplin.
Young & Creller.....	P. C. Campbell.....	Joplin.

NEWTON COUNTY.

American Tripoli Co.....	.....	Seneca.
Bale, F. D.....	.....	Joplin.
Bucklin, H. E.....	.....	Chicago.
Bucklin, H. E.....	Big Eureka M. Co.....	Spurgeon.
Bucklin, H. E., & Willis, W. G.	Knoxall M. Co.....	Spurgeon.
Bucklin, H. E., & Willis, W. G.	Cora Jenette M. Co.....	Spurgeon.
Bucklin, H. E., & Willis, W. G.	Hub M. Co.....	Spurgeon.
Bucklin, H. E., & Willis, W. G.	Roaring Gimlet M. Co.....	Spurgeon.
Bucklin, H. E., & Willis, W. G.	Smith & Jones Mine.....	Spurgeon.
Bucklin, H. E., & Willis, W. G.	Boar Coon Mine.....	Spurgeon.
Clark, Reding & Co.....	.....	Joplin.
Clark, Reding & Co.....	South Shoal Creek M. Co.....	Joplin.
Clark, Reding & Co.....	Nemo M. Co.....	Joplin.
Clark, Reding & Co.....	Clark & Co.....	Joplin.
Dilworth, R. F.....	.....	Joplin.
Dilworth, R. F.....	Geo. A. Warren & Co.....	Joplin.
Ellis, J. W.....	.....	Diamond.
Empire Z. Co.....	.....	Joplin.
Empire Z. Co.....	Home M. Co.....	Joplin.
Freeman, J. W.....	.....	Joplin.
Freeman, J. W.....	Shoal Creek M. Co.....	Joplin.
Freeman, J. W.....	Reding & Co.....	Joplin.
Freeman, J. W.....	McClelland & Co.....	Joplin.
Freeman, J. W.....	Frank Sowders & Co.....	Joplin.
Gilt Edge M. Co.....	.....	Diamond.
Gregg, H. H.....	.....	Joplin.
Granby M. and S. Co.....	.....	Granby.
Granby M. and S. Co.....	Pennsylvania M. and S. Co....	Granby.
Granby M. and S. Co.....	Wyoming M. and M. Co.....	Granby.
Granby M. and S. Co.....	Mears M. Co.....	Granby.
Granby M. and S. Co.....	Little Boss M. Co.....	Granby.
Granby M. and S. Co.....	Wm. B. Parker.....	Spurgeon.
Granby M. and S. Co.....	Parker & Coates.....	Spurgeon.
Granby M. and S. Co.....	Estewawa M. Co.....	Joplin.
Granby M. and S. Co.....	M. & R. M. Co.....	Joplin.
Gregg, H. H.....	.....	Joplin.
Gregg, H. H.....	Leddy & Joseph.....	Joplin.
Howard M. Co.....	.....	Carthage.
Howard M. Co.....	Geo. E. Moore.....	Monticello, Ill.
Olson, E. J.....	.....	Neosho.
Olson, E. J.....	Watson & Co.....	Joplin.
Rich, Sol V.....	.....	Joplin.
St. Paul M. Co.....	.....	Joplin.
Sagino L. and Z. Co.....	.....	Neosho.
United Zinc Cos.....	.....	Joplin.

Occurred at 3 p. m., until 8 p. m. of the same day. Deceased, it is claimed, made the statement that he was preparing a charge for a shot. He had, prior to finishing his "dummy," as he called it, placed his lamp in a box, and when his cartridge was finished was in the act of laying it down, when, as he is reported to have stated, everything was on fire. His partner was at work at the face of their room, but did not know what was going on, nor was he able to describe how the accident occurred. It might be asked when will operators and miners insist on having experienced men perform certain work, requiring careful experience, in our mines? The law, section 8803, provides: It shall be unlawful for any operator or agent of coal mines to employ persons underground whose duties may involve contact with inflammable gases, or the handling of explosives, who have not had experience in such duties, unless all such employes are placed under the immediate charge and control of some competent and experienced miner, so as to secure the safety of other persons employed in the same mine.

MACON COUNTY.

Elijah S. Lucas, a miner, was killed by a falling rock in mine No. 52 of the Central Coal & Coke Co., February 29, 1904. According to the evidence given at the coroner's inquest, Lucas was working with F. H. Frazier, another miner, drawing pillars. Frazier called the attention of deceased to a large rock which appeared to be loose over his head, but the latter, after examining it said that it was all right. Soon after, without the least warning, the rock fell on Lucas, killing him instantly. The finding of the coroner's jury was that "Elijah S. Lucas came to his death by the falling of a rock in mine No. 52 on the 29th day of February, 1904." The verdict is neither explicit nor adequate, in that it does not find that the man was struck by the rock, nor show whether the accident was or was not the result of negligence on the part of anybody. Deceased was 28 years of age and single.

Tobias Buselline, coal miner, 37 years of age, working in mine No. 1 of the Northwestern Coal & Mining Co., Bevier, was killed by falling rock June 9, 1904. The evidence given before the coroner was to the effect that the unfortunate man had been working alone in his room and was killed right at the face of the room by the fall of what was thought to be a "bell" rock. Some men at the entry heard the noise caused by the fall, and went into the room, where they found the man under the rock. He lived about two hours after the accident occurred.

The coroner's verdict was that deceased came to his death by unforeseen accident, no negligence being ascribed to any one. Deceased was married and had four children.

Robert Hicks, a miner employed by the Central Coal & Coke Co., at mine No. 24 of said company, was killed June 28, 1904, by a falling rock. He was 26 years of age, married, but had no children. No inquest was held, but Stephen Hicks, a brother of the deceased, and who was working with him at the time, made a signed statement to Dr. Gooch, coroner, which was to the effect that he and his brother had been working together on the first north entry room No. 10, when the rock fell which crushed out his brother's life. He said that the victim of the accident had been digging under the rock and had sounded it an hour previously, when it appeared a little loose, but he nevertheless continued to work under the rock without taking the precaution to timber it. The unfortunate man was evidently killed as a result of his own negligence.

Peter Carrotti, employed as a miner at mine No. 61 of the Central Coal & Coke Co., was injured by a fall of rock July 23, 1904, from which injury he died six hours later. The accident occurred in a room adjoining that wherein he was working, and how he came to go into the room or what business he had there is not known, as there were no witnesses to the accident. He was removed to a hospital at Mobile as promptly as possible, but the injuries he had received resulted in death a few hours afterwards. No inquest was held. Deceased was 18 years of age.

RAY COUNTY.

D. A. Bisbee, a mine operator, was killed in his own mine, near Knoxville, by a fall of rock, September 8, 1904. No inquest was held, as it was not deemed necessary, the death being regarded as purely accidental. Deceased pursued both farming and coal mining as occupations. He was 45 years of age, married, and had one child, a son.

RANDOLPH COUNTY.

November
No. 1
had

, a miner 50 years of age, was instantly killed November 1, 1904, at the time of the accident he was employed in mine No. 1 of the Central Coal Co., room 5, third north entry. The deceased had been with the company six months. He was an Italian.

married and the father of two children; his family was in Italy. We have given all the facts we could get at, the management of the mine changed hands and the present management could find no record by which more light could be furnished.

NON-FATAL ACCIDENTS.

ADAIR COUNTY.

D. C. Stevens, coal miner, working in mine No. 2 of the Sheridan Coal Co., was injured December 15, 1904, by a fall of rock. He was at work in his room at the time of the accident, and hence was responsible for its safety, provided he was supplied with the necessary material to make it safe. The fall of rock was doubtless due to carelessness on the part of the injured man.

BATES COUNTY.

T. E. Morgan, coal miner, employed in mine No. 1 of the New Home Coal Co., Bates county, was severely burned by the premature explosion of a shot, July 18, 1904. Morgan on the Saturday before the accident had a shot that missed fire, and on the Monday following he began digging out the cartridge. He succeeded in taking out about one foot of it, which, it appears, he found to have been damaged by moisture, and assuming that the remainder was damaged also he used his metal drill to get it out. The drill, coming in contact with some sulphur in the drill hole, struck fire and the shot went off. His arms, hands and face were burned.

BOONE COUNTY.

Clabe Eubanks, a miner employed by Marvin R. White, was injured by a fall of rock, October 20, 1904. Eubanks was sitting down, removing some loose coal, when without warning the rock fell on him, injuring his spine and partially paralyzing his legs. The fall was the result of a draw slate coming in with the coal, and although the room was well timbered, yet the failure of Eubanks to take down the draw slate proved disastrous. It appeared to be a clear case of neglect on the part of the injured man, which he himself acknowledged. On April 1, 1905, he was reported as doing well and likely to recover.

MACON COUNTY.

Pio Flori, working as a coal miner at mine No. 61 of the Central Coal & Coke Co., was injured by a fall of rock, August 26, 1904. He was driving an entry, and was loading his coal when a piece of rock about four feet wide fell from the roof even with the face, and broke both bones of the left leg below the knee. The physician who attended him claimed he would recover without permanent injury.

Frank Schiliszio, employed as a miner in mine No. 8 of the Northwestern Coal & Mining Co., was injured, May 26, 1904, by a fall of roof. The injured man was engaged in setting a prop in his room when the rock over the prop broke and fell on him. No bones were broken, but he was badly bruised.

Angele Nardenie, an Italian coal miner, working at mine No. 61 of the Central Coal & Coke Co., had his skull fractured by a fall of coal, February 27, 1904. The unfortunate man was in his room wedging down his top coal when a part of the coal fell on him with results as stated.

Louis Rhonconni, coal miner, 25 years of age and unmarried, was injured January 18, 1904, while at work in mine No. 8 of the Northwestern Coal & Mining Co., by a fall of rock. The injured man had fired a shot which knocked some props down and caused a part of the roof to fall in. He proceeded to clear away the fallen rock, and while so engaged his neighbor in the next room advised him to call in the pit boss before proceeding further; but Rhonconni did not think it necessary to do this and continued his work. Soon after a rock dropped from the roof and fell on his leg, breaking it at the hip.

August Pohl, a coal miner in the employ of the Central Coal & Coke Co., in mine No. 12, was injured January 6, 1904, by a fall of coal. Pohl was at work in his room taking down top coal when a part of the same fell on him, injuring his back, shoulders and arms.

August Contenento, coal miner, an Italian, 40 years of age and single, met with a painful accident in mine No. 15 of the Bevier Coal & Mining Co., February 10, 1904, by a fall of rock. The injured man was at his working place at the face when the rock fell from the roof,

dicting bruises and cuts on his face and other parts of his body. The jury was due to his own negligence, as he evidently did not sound his of, which every good miner should do before beginning work.

James McDonald, coal miner, employed at mine No. 24 of the ntral Coal & Coke Co., met with a very serious accident May 21, 1904. He was at work in his room when a rock fell from the roof and uck him. The right femur was fractured between upper and mid-thirds, and left femur dislocated at hip joint, with slight injuries his nose and right eye. He was placed in the hospital at Moberly, and e month later was reported as recovering as fast as could be expected. e carried some insurance.

RANDOLPH COUNTY.

H. C. Chandler, coal miner, employed by the Randolph-Macon al Co., at mine No. 6, was injured by an accident in the mine on February 17, 1905. It appears that he walked from his working place, at e head of the entry, under some loose rock which were being taken wn by timbermen from the roof, and pieces of the falling rock hit him, aking two of his ribs and bruising his back and side. He had been tioned, it is said, to keep off, but that he carelessly walked under loose rock and placed himself in a position of danger. Chandler, o was 45 years of age, with a wife and two children, recovered suffi- ntly from the accident to be able to return to his home in West Vir- ia.

John Butcher, a coal miner employed by the Hollingsworth Coal ., Randolph county, was injured October 12, 1904, by the fall of a k. Butcher was sitting in an entry eating his dinner, his foot being the rail, when a rock fell from the rib and mashed his foot.

RAY COUNTY.

Thomas Taylor, coal miner, employed at the mine of W. E. Murlin, y county, was injured by a fall of roof October 22, 1904. He was at rk in his room when the fall of rock occurred. The injuries were : regarded as serious.

VERNON COUNTY.

John Hardy, employed as cager by the Central Coal & Coke Co., *his hand mashed by the fall of a piece of coal in mine No. 23, July*

1, 1904. Hardy had sent up a loaded car on the cage and was taking off an empty car at the bottom when a piece of coal fell from the tippie down the shaft, striking him on the hand.

C. W. Daugherty, employed at mine No. 23 of the Central Coal & Coke Co., as a car pusher, was severely injured by a mine car, June 9, 1904. Daugherty failed to block a car on the incline, and while trying to reach a car on the incline ahead of him the car which he had failed to block started down and caught him, breaking his right leg in two places and the left leg in one place. The accident did not result fatally. He carried some insurance, amount not known.

August Rambert, working as a coal miner at mine No. 23 of the Central Coal & Coke Co., was injured July 16, 1904, by being caught between two mine cars. At the time of the accident he had two loaded cars in his room and was endeavoring to get them to the mouth of the room. The loaded car next to his was left without spragging it, and while he attempted to take the forward car to the face, the car which had been left without a sprag started and he was caught between the two. His injuries consisted of a broken rib and a scalp wound. Rambert is a married man, but his family is in the old country.

N. Flanang, coal miner, in the employ of the Central Coal & Coke Co., at mine No. 21, had his right leg broken by a fall of roof, October 10, 1904. It appears that he was at work in his room, and that prior to the fall of slate from the roof he had been instructed by the pit boss to set up more props, but this he neglected to do. The dislodged slate fell and broke his right leg, between the knee and ankle.

ACCIDENTS IN COAL MI

Name of company or operator	Name of injured person	Date of accident	Occupation of injured person	Single or multiple
Central Coal & Coke Co.	August Pohl	Jan 6	Miner.	Single
Northwestern Coal & M. Co.	Louis Rinkohl	Jan 10	"	Single
Bevier Coal & M. Co.	August Lambrecht	Feb 10	"	Single
Central Coal & Coke Co.	Angelo Santoro	" 17	"	Single
Kanawha Valley Mfg. Co.	Edward Jones	" 17	"	Single
Cabined Coal Co.	Frank Vock	Apr 14	"	Single
Central Coal & Coke Co.	Samuel Gentry	May 19	"	Single
Northwestern Coal & M. Co.	James McDonald	" 21	"	Single
Central Coal & Coke Co.	Frank Schmale	" 26	"	Single
Northwestern Coal & M. Co.	C. W. Lambrecht	June 6	"	Single
Central Coal & Coke Co.	Tobias Williams	" 8	"	Single
New Home Coal Co.	Robert Hicks	" 24	"	Single
Central Coal & Coke Co.	Geo. Handletter	" 29	"	Single
" " "	Joe Hardy	July 1	Caper.	Single
" " "	August Lambert	" 16	Miner.	Single
New Home Coal Co.	T. L. Morgan	" 17	"	Single
Central Coal Co.	Peter Carrutti	" 21	"	Single
Manufacturers' C. & C. Co.	Tony Konyer	Aug 26	"	Single
Central Coal & Coke Co.	Pio Flori	" 26	"	Single
D. A. Hulse	D. A. Hulse	Sept 8	Farmer & oper.	Single
Marcelline Fuel Co.	Joe Jeffler	Oct 12	Miner.	Single
Hollingsworth Coal Co.	Joe Butcher	" 12	"	Single
Marvin R. White	Clabe Eubanks	" 20	Miner & farmer.	Single
W. E. Murfin	Thomas Taylor	" 22	Miner.	Single
Central Coal & Coke Co.	S. Flanagan	" 24	"	Single
Bolen-Darnall Coal Co.	Ventin Abnana	Nov. 16	"	Single
Sheridan Coal Co.	D. C. Stevens	Dec. 15	"	Single

RING THE YEAR 1904.

Nature of accident.	Coroner's verdict.	County.
Fall of coal.....	.....	Macon.
Fall of roof.....	.....	..
.....
Fall of coal.....	.....	..
Fall of roof.....	Fall of rock in mine No. 52.....	..
Shot through pillar	His own carelessness.....	Adair.
Fall of roof.....	Accidental, no one to blame.....	Caldwell.
.. ..	.....	Macon.
Mine car .....	.....	Vernon.
Fall of roof.....	.....	Macon.
.....	No inquest.....	.....
Explosion of p'wd'r	.....	Bates.
Fall of coal from car	.....	.....
when taken off cage	.....	Vernon.
Mine car .....	.....	.....
Unloading def. shot	.....	.....
with a churn drill	.....	Bates.
Fall of roof.....	.....	Macon.
.. ..	Came to his death by a fall of rock.....	Adair.
.. ..	.....	Macon.
.. ..	No inquest.....	Ray.
Explosion of p'wd'r	.....	Linn.
Fall of roof.....	.....	Randolph.
.. ..	.....	Boone.
.. ..	.....	Ray.
.. ..	.....	Vernon.
.. ..	No inquest.....	Randolph.
.. ..	.....	Adair.

*Unknown. \$1,000. W. O. W.

STRIKES.

It is our pleasure to report a total absence of any very serious strikes during the year. Many of those accounted for were of a trivial nature, and not worthy of mention under that head. It would be a wonder, indeed, where there are so many mines and so many men engaged in them, that in the course of a year, some friction would not be manifested.

STRIKES BY COUNTIES.

ADAIR COUNTY.

Manufacturers Coal & Coke Co., Mine No. 1.—Five strikes occurred in this mine during the year, two of which were due to sympathy with striking miners at other mines who went out on account of petty grievances. The remaining three were the result of mistakes made by the pit committee, but the strikes were all of short duration, lasting only a few days in each case. An average of 80 men were thrown out of employment. These strikes were settled by the miners returning to work on practically the same understanding and conditions which prevailed previously.

Mine No. 2.—Seven strikes occurred here during 1904, all due more or less to lack of circumspection on the part of the pit committee, but lasting only for a short time—not more than two days in any case. The men were ordered back to work by the district officers of the United Mine Workers' Association of America. The number of men out during these strikes averaged 54. Work was resumed in nearly every case virtually upon the same terms and conditions that prevailed before the strikes.

Mine No. 3.—No strike at this mine due to differences at the mine, but 68 men were out for one day, by call of committee from other mines where strikes existed, as marking their sympathy with the striking miners of such other mines, when the former returned to work by order of the pit committee.

Mine No. 4.—No strike at this mine caused by any trouble there, but 35 men went out for one and one-half days in sympathy with the strikers at mine No. 2, and then returned to work under instructions of the pit committee.

Mine No. 7.—In response to call of the committee, 116 men at this mine were out one day in sympathy with the strikers at mine No. 2, and returned to work somewhat displeased with those who made the call for the strike.

Mine No. 50.—Two strikes occurred at this mine, one of which was caused by the appointment of a man objectionable to the pit committee to take the place of an engineer who had quit. This strike lasted two days and affected 84 men. It was settled by the district officers of the U. M. W. A. of A., who ordered the men back to work. The second strike was caused by a miner making complaint of a mistake in his statement of account and delay of the company for one day to correct it. When corrected, the following day, the men returned to work.

Rombauer Coal Co.—Caused by the discharge of an engineer a strike occurred here in September, lasting for a period of ten days. The strike threw 250 men out of employment for the time being. It was settled by the president of the U. M. W. A. of A. and the commissioner of the operators' association.

The Sheridan Coal Co.—Two strikes occurred at the mine operated by this company, caused by grievances between the pit boss and miners, and were settled by arbitration. In neither case were the men out more than three days.

BARTON COUNTY.

Western Coal & Mining Co.—A small local strike occurred here. The miners demanded that they be hoisted in and out of the mine instead of being compelled to walk up and down man way. They agreed to allow the mine inspector to settle the difficulty, but he having decided against them they refused to abide by his decision. After being out two days, the operators granted the miners' request, and they returned to work.

BOONE COUNTY.

Prayther Coal Co.—A new local union being instituted here, and the operators not concurring with the requirements thereof, the men went out for a period of seven days; but as soon as operators fully understood the situation and requirements they acquiesced, and the trouble was amicably adjusted.

DADE COUNTY.

R. M. McCluey.—The miners here, 14 in number, demanded free coal for their own use, which being refused, they went out, and the operator supplied their places with other men.

LAFAYETTE COUNTY.

Dover Coal Co.—A strike lasting about two months occurred at this mine. The men wanted to draw pension, and got it. Finally, when the pension was discontinued, they went out, but returned to work under the terms of a contract entered into with the miners' union.

MACON COUNTY.

Becrier Coal & Mining Co.—On account of objection to the employment of two men, a strike affecting 100 men was inaugurated at mine No. 15 of this company, November 18, 1904. The matter being taken up by the officers of the U. M. W. A. of A., a decision was rendered in favor of the company and the men ordered to return to work November 22, but the company did not find it convenient to resume operations till December 5, 1904.

PUTNAM COUNTY.

Blackbird Block Coal Co.—Owing to a disagreement over scale between the Mine Operators Association and the United Mine Workers Association of America, a strike occurred here which called out 42 men. After the strike had continued 32 days, the trouble was adjusted by the operators.

J. J. Pricc.—On account of failure to agree as to mining price, the miners at this mine struck on April 1, the strike continuing until June 17, when it was settled by mutual agreement.

Mendota Coal & Mining Co.—Mines Nos. 2 and 9, also mine No. 7, leased to Hardy Medlin, and No. 8, leased to W. F. Yates, each and all are subject to the scale made at Des Moines, Iowa, District No. 13. The scale agreed upon by the district did not meet the approval of the miners in the above named mines, although the operators and the representatives of our miners agreed to and signed the scale. The miners in the mines went out on a strike April 1, 1904, and could not be induced by the district officers to return to work. Finally the operators were compelled to make a new contract, under which the men resumed work April 19, 1904. An average of 306 men were out for a period of 49

RANDOLPH COUNTY.

Bolen-Darnall Coal Co.—The men employed by this company went on a strike, September 1, 1904, owing to the refusal of the day men to accept a reduction provided for in new contract, but they consented to accept the reduced price on September 9, and returned to work.

SCHUYLER COUNTY.

Manufacturers Coal & Coke Co.—Two strikes occurred at mine No. 1 of this company. One was caused by the refusal of the operators to comply with the demand of the men that the coal be pushed from the face of the mine in like manner as in the Novinger coal field. The strike, which lasted about two weeks and affected 47 men, was settled by the strict president of the U. M. W. A. of A., whose decision sustained the company in the position it had taken. The second strike was owing to miner's account or statement being short 70 cents on pay day, and although the company advised that it would be adjusted the following day, which was not satisfactory to the mine workers, and they all went out, the strike, however, lasting but one day.

VERNON COUNTY.

Meek & Co.—Had a small strike here, the men demanding shorter hours, which being finally granted by the company, they returned to work.

OPERATORS' AND MINERS' AGREEMENT.

No plan or agreement thus far devised for the adjustment of grievances arising in the mining of coal, will compare with present methods in vogue. For the benefit of those unacquainted with the purpose and object of the agreement, we will briefly outline the same. By perusing the agreement which follows in its entirety, one will find numerous subjects which lead to differences of opinion, and out of which friction and strikes may be developed. In order to avoid contention, strife and strikes, the Operators Association appointed a committee which was at stated periods to meet a like committee from the miners' organization in convention, the object being to fix prices for mining coal and other classes of work performed in coal mines; also to agree upon rules that should obtain during the forthcoming two-year period. The present period covered under the agreement will expire March 31, 1906. It is sincerely hoped that the next meeting will be as harmonious as it is possible for such convention to be, and that just and equitable agreements may be speedily arrived at. We do not think this agreement receives the attention or commendation it so richly deserves from the thinking public. The peace, happiness and comfort of our 10,000 men are largely due to the agreements arrived at by the gentlemen representing employer and employe. As a preventive of strikes it is pre-eminently the superior to any plan yet formulated, and is unquestionably a great success. How many are able to fathom the baneful influences and the distress occasioned by a prolonged strike. If the agreement accomplished no other purpose than that of avoiding strikes, that of itself will stamp it a glorious institution. The Southwestern Inter State Coal Operators' Association has, as its commissioner, Mr. Bennett Brown, with whom and from whom it draws its practical information. Mr. Brown has a practical knowledge of coal mining second to no one. He knows this fact himself, and besides has the courage of his convictions. His thorough honesty and splendid qualities of heart and mind, make him an ideal man for the position he holds.

The United Mine Workers Association of America, District No. 25, have in George Colville, president, and George Manuel, secretary, two exceptionally well qualified officers. Their duties are arduous, *difficult* and full of perplexing questions and conditions. Very few

men could be taken out of the mines who can perform the duties they do with less than four or five years of experience, and perhaps not then, as it requires a level head, courage, honesty and a thorough acquaintance not with one or two mines in a certain district, but with all classes in all districts. All of these qualifications are absolutely necessary to men holding their positions, and these are had only by actual experience and contact with operators and miners all over the State. Both of these officers are loyal to the miners, for they are to the manor born, and frequently the exercise of prudence on their part, mixed with a conservatism, works out better results for their craft than a less diplomatic course than they persue would accomplish.

JOINT INTER-STATE AGREEMENT OF OPERATORS AND MINERS.

It is hereby agreed between the representatives of the Southwestern Interstate Coal Operators' Association and the representatives of Districts 14, 21 and 25 of the United Mine Workers of America, that the existing Interstate, District and Texas agreements be continued without any change or addition whatever, except as follows:

Day wage, yardage, dead and deficient work, to be reduced throughout 5.55 per cent, except the day wage scales in Texas mines, which shall be reduced one-half the above amount.

Interstate and District scales to be signed simultaneously at Pittsburgh, and to expire March 31, 1906.

INSIDE DAY WAGE SCALE

Track layers' helpers	\$2 23
Trappers	1 07
Bottom cagers	2 42
Track layers	2 42
Drivers	2 42
Trip riders	2 42
Pushers	2 42
Water haulers and machine haulers.	2 42
Timberman, where such are employed.	2 42
Pipe men for compressed air plants.	2 36
All other inside day labor.	2 23
Spragging, coupling and greasing when done by boys.	1 65
Shaft sinkers	2 64
Shot firers under normal conditions.	2 9

OUTSIDE WAGE SCALE.

First blacksmiths	\$2 83
Second blacksmiths	2 60
Blacksmiths' helpers	2 23
Carpenters	2 30

(Provided that in no case will there be any reduction from the rate of wages now paid to carpenters of more than 5.55 per cent.)

All other outside day labor not enumerated..... \$1 91

Provided, that any class of outside day labor now receiving \$2.02½ or more per day shall be reduced 5.55 per cent. This provision only applies to outside day labor not otherwise enumerated.

SCALE FOR ENGINEERS.

Engineers, first class, 500 tons and over, per month.....	\$74 62
Second class, 300 to 500 tons, per month.....	68 95
Third class, 300 tons or less, per month.....	61 40

Tail rope and slope engineers shall be reduced 5.55 per cent below present wages.

The minimum rate for tail rope and slope engineers shall be \$2.25 per day, or \$58.56 per month; provided, further, that the maximum rate for tail rope and slope engineers shall be \$2.55 per day or \$66.12 per month. Twenty-six days to constitute a month's work and nine hours to constitute a day's work. All over-time in excess of nine hours to be paid for at a proportionate rate per hour.

The tonnage shall be determined by the average for the month of November, 1902, and based upon mine run coal, but in no case shall any reduction from the present wages be made.

This scale of wages applies only to mines in operation at least one year, and in all new mines the wages of the engineers shall be advanced with the increased tonnage until the maximum rate is reached; provided, that in no case shall engineers employed at new mines receive less than \$2.25 per day; also that in no case shall engineers, firemen or pumpers be interfered with or asked to cease work by any local committee or local union official during the life of this contract.

The mining prices inside and outside day wage scale (except engineers) provided for in this contract is based upon an eight hour work day.

RULES AND REGULATIONS—EIGHT HOUR DAY.

All classes of day labor are to work full eight hours, and the going ~~to~~ and coming from the respective working places is to be done on the ~~day~~ hands' own time. All company men shall perform whatever day labor the foreman may direct. An eight hour day means eight hours' work in the mines at the usual working places, exclusive of noon time—which shall be one-half hour—for all classes of inside day labor. This shall be exclusive of the time required in reaching such working places in the morning and departing from the same at night.

Drivers shall take their mules to and from the stables, and the time required in so doing shall not include any part of the day's labor; their time beginning when they reach the change at which they receive empty cars—that is, the parting drivers at the shaft bottom and the inside drivers at the parting—and ending at the same places; but in no case shall a driver's time be docked while he is waiting for such cars at the points named. The inside drivers, at their option, may either walk to and from their parting or take with them, without compensation, either loaded or empty cars to enable them to ride. This provision, however, shall not prevent the inside drivers from bringing to and taking from the bottom regular trips, if so directed by the operator, provided such work is done within eight hours.

When the stables are located outside the mine the companies agree to deliver the mules at the bottom of the shaft in the morning and relieve the drivers of the mules at the bottom of the shaft at night.

When the men go into the mine in the morning they shall be entitled to two hours' pay whether or not the mine works full two hours; but after the first two hours the men shall be paid for every hour thereafter, by the hour, for each hour's work or fractional part thereof. If for any reason, the regular work can not be furnished the inside day laborers for a portion of the first two hours, the operators shall furnish other than the regular labor for the unexpired time.

PENALTIES FOR LOADING IMPURITIES.

In order to insure the production of clean, marketable coal, it is herein provided, that if any miner shall load with his coal, sulphur, bone, slate, blackjack or other impurities, he shall, for the first offense, be notified by the mine foreman; for the second offense he may be suspended for one day; for the third and each subsequent offense occur-

ring in any one month he may be suspended for three days; provided, that if in any case, it is shown that a miner maliciously or knowingly loads impurities, he shall be subject to discharge. It is further agreed that if any miner, has been suspended and claims that an injustice has been done him, the matter shall be taken up for investigation and adjustment in the manner provided in section three of this agreement.

DUTIES OF PIT COMMITTEE.

(a) The duties of the pit committee shall be confined to the adjustment of disputes between the pit boss and any member of the U. M. W. of A. working in and around the mines, arising out of this agreement or any District or Sub-District agreement made in connection therewith, when the pit boss and said miner or mine laborer have failed to agree.

(b) In case of any local trouble arising in any mine through such failure to agree between the pit boss and any miner or mine laborer, the pit committee and the pit boss are empowered to adjust it, and in the case of their disagreement it shall be referred to the superintendent of the company and the district president of the U. M. W. of A., or such person as he may designate to represent him; and should they fail to agree it shall be referred to the Commissioner of the Southwestern Interstate Coal Operators' Association and the district president of the U. M. W. of A. for adjustment; and in all cases the mines, miners, mine laborers and parties involved must continue at work pending an investigation and adjustment, until a final decision is reached in the manner above set forth.

(c) If any day men refuse to continue at work because of a grievance which has or has not been taken up for adjustment in the manner provided herein, and such action shall seem likely to impede the operation of the mine, the pit committee shall immediately furnish a man or men to take such vacant place or places at the scale rate, in order that the mine may continue at work; and it shall be the duty of any member or members of the United Mine Workers who may be called upon by the pit boss or pit committee to immediately take the place or places assigned to him or them in pursuance hereof.

(d) The pit committee, in the discharge of its duties, shall under no circumstances go around the mine for any cause whatever, unless called upon by the pit boss or by a miner or company man who may have a *grievance that he cannot settle with the boss*. Any pit committeeman *who shall attempt to execute any local rule or proceeding in conflict*

with any provision of this contract, or any other made in pursuance hereof, shall be forthwith deposed as committeeman. The foregoing shall not be construed to prohibit the pit committee from looking after the matter of membership dues and initiations in any proper manner.

(e) Members of the pit committee employed as day men shall not leave their places of duty during working hours except by permission of the operator, or in cases involving the stoppage of the mine.

(f) The right to hire and discharge, the management of the mine and the direction of the working force are vested exclusively in the operator, and the U. M. W. of A. shall not abridge this right. It is not the intention of this provision to encourage the discharge of employes or the refusal of employment to applicants because of personal prejudice or activity in matters affecting the U. M. W. of A. If any employe shall be discharged or suspended by the company and it is claimed that an injustice has been done him, an investigation, to be conducted by the parties and in the manner set forth in paragraphs "a" and "b" of this section shall be taken up promptly and if it is proven that an injustice has been done, the operator shall re-instate said employe and pay him full compensation for the time he has been suspended and out of employment; provided, if no decision shall be rendered within five days the case shall be considered closed, in so far as compensation is concerned, unless said failure to arrive at a decision within five days is owing to delay upon the part of the operator, in which case a maximum of ten days' compensation shall be paid.

work.

LOCAL DEMANDS.

There shall be no demands made locally by either operators or miners which are in conflict with this agreement, or any District or Sub-District agreement made prior to September 1, 1904; and there shall be no provision imposed violating the same. Any local member, official or committee shutting down a mine without orders from the District President or District Executive Board shall be fined in the manner provided for in the national constitution of the U. M. W. of A., and such additional penalties may be imposed as are now or may be provided for in the constitutions of the various district organizations. All such fines are to be collected by the companies and paid into the district treasury of the U. M. W. of A. Should any operator violate this agreement, or any provision hereof, such operator or company shall be fined one hundred dollars (\$100), said fine to be paid into the treasury of the Southwestern Interstate Coal Operators' Association.

PAYMENT OF WAGES.

The operators agree to pay twice a month, the dates of payment to be determined by the District joint conventions; and these payments are to be made at the office nearest to the mine wherein or at which the employees are employed; provided, however, that this office shall be located not more than two miles from such mine.

CHECK-OFF.

The operators will recognize the Pit Committee in the discharge of their duties, as provided in this agreement, and agree to check off dues, assessments, fines and initiations from all miners and mine laborers when desired. In order to protect the companies, the U. M. W. of A. agrees when the companies so demand, to furnish a collective and continuous order authorizing the companies to make such deductions. The companies agree to furnish the miners' local representatives a monthly statement showing separately the amount of dues, assessments, fines and initiations collected. In case any fine is imposed the propriety of which is questioned, the amount of such fine shall be withheld by the operator until the case has been taken up for adjustment and a decision reached.

It is agreed that the miners may employ a Check-Weighman to see that coal is properly weighed and a correct record made thereof, and when such Check-Weighman is employed the companies shall furnish him a check number, and he shall credit to his number such portion of each miner's coal as he may be authorized to do by the local union. It is understood that the above provision shall not affect the arrangements now existing at any mine where a check number is issued in the name of the local union, and dues, assessments, fines and initiations collected by this method.

MEASUREMENTS.

It is agreed that measurements of entires, brushing, room turing and deadwork shall be made semi-monthly, and payment in full shall be made for such work in the same manner as that in which other work is paid for.

EQUAL TURN.

The operator shall see that an equal turn is offered each miner and that he be given a fair chance to obtain the same. The Check-Weigh-

man shall keep a turn-bulletin for the turn-keeper's guidance. The drivers shall be subject to whomever the mine manager shall designate as turn-keeper in pursuance hereof.

DEATHS AND FUNERALS.

In the event of an instantaneous death by accident in the mine, the miners and underground employes shall have the privilege of discontinuing work for the remainder of that day; but work at the option of the operator, shall be resumed the day following and continue thereafter. In case the operator elects to operate the mine on the day of the funeral of the deceased, as above, or where death has resulted from an accident in the mine, individual miners and underground employes may, at their option, absent themselves from work for the purpose of attending such funeral, but not otherwise. And whether attending such funeral or not, each member of the U. M. W. of A. employed at the mine at which the deceased member was employed, shall contribute fifty (50) cents and the operator twenty-five (\$25) dollars for the benefit of the family of the deceased or his legal representatives, to be collected through the office of the company. In the event that the mines are thrown idle on account of the miners' or other employes' failure to report for work in the time intervening between the time of the accident and the funeral, or on the day of the funeral, then the company shall not be called upon for the payment of the twenty-five (\$25) dollars above referred to.

Except in cases of fatal accidents, as above, the mine shall in no case be thrown idle because of any death or funeral; but in the case of the death of any employe of the company or member of his family, any individual miner may, at his option, absent himself from work for the purpose of attending such funeral, but not otherwise.

DOCTOR.

No deduction shall be made for doctors unless such deduction is authorized by the individual employe.

CONDITION OF THE MINES.

The company shall keep the mine in as dry condition as practicable, by keeping the water off the road and out of the working places. When a miner has to leave his working place on account of water, through the neglect of the company, they shall employ said miner doing company work when practicable, and provided that said miner is competent

do such work, or he shall be given another working place until such water is taken out of his place.

PROVISIONS FOR INJURED.

The operators shall keep sufficient blankets, oil, bandges, etc., and provide suitable ambulance or conveyance, readily available at each mine to properly convey injured persons to their homes after an accident.

POWDER.

The price of powder shall be \$2.00 per keg during the term of this contract.

1906 JOINT CONVENTION.

It is agreed that the Southwestern Interstate Coal Operators' Association and the representatives of the United Mine Workers of America shall meet in the city of Indianapolis, Indiana, on the 25th day of January, 1906, at 10 o'clock a. m.

APPENDIX—HARNESSING MULES.

In regard to taking the mules into the mine where the mules are kept on top of slope opening, the mules are to be taken to and from the tipple to the mouth of the slope. In shaft openings the mules are to be taken down and up the shaft by the company, either by the drivers on the company's time, or by the company employing a man to do so; and it may employ any man, or number of them, it chooses, to do this work.

Where mules are kept in the mine, if the mules are harnessed by the company, the driver must be at the pit bottom, or the parting where he commences work, ready to begin at starting time. If the driver harnesses the mules, he does so on the company's time.

PENALTIES FOR LOADING IMPURITIES.

The interpretation of, or the construction to be placed upon, that paragraph relative to penalties for loading impurities in the agreement between the U. M. W. of A. and the Southwestern Interstate Coal Operators' Association, entered into at Pittsburg, Kansas, July 27, 1903, having been referred to the undersigned, is ruled upon as follows. *The paragraph reads:*

In order to insure the production of clean, marketable coal, it is hereby provided that if any miner shall load with his coal, sulphur, bone, slate, blackjack or other impurities, he shall, for the first offense, be notified by the mine foreman; for the second offense he may be suspended for one day; for the third and each subsequent offense occurring in any one month he may be suspended for three days; provided, that if in any case it is shown that a miner maliciously or knowingly loads impurities he shall be subject to discharge."

The question is upon what constitutes "one month" within the meaning and the intent of this contract.

It was clearly intended by the parties to this contract that if it became necessary to insure the production of clean coal, the penalties provided in this agreement should be and could be inflicted. It is also clear that if the operation of this agreement is to be limited and confined to each calendar month for the period it is in effect, the penalties can not be inflicted as contemplated by the parties to the agreement, and the offender must be allowed to go unpunished.

For example, suppose a miner is notified on the first, or any subsequent day of the calendar month that he has loaded dirty coal—that is the extent of his punishment for that offense; and, suppose, he is notified on the first, or any subsequent day of the calendar month following, that he has loaded dirty coal, that is the limit of his punishment for the second offense, notwithstanding the second offense may have been committed on consecutive days; that is to say, on the last day of one calendar month and the first day of the calendar month following.

Again, the first offense may be committed on any day subsequent to the first day of the month; the second offense on any day subsequent to the first offense, and the third offense on the first day of the succeeding month, or any subsequent day, and the offender go practically unscathed, because no penalty other than that provided for the second offense could be inflicted. Again, if the second offense occurred on the last day of any calendar month on which the first offense occurred, the offense is condoned, because of the application, as lawyers would say, of the "Statutes of Limitations" interfering to save the offender from the infliction of the punishment provided as just and necessary to the consummation of the intent and purpose of the contract—the "insurance of the production of clean, marketable coal."

Now, in my judgment, that could not have been the intent and purpose of the parties to this agreement, because they clearly intended that the penalty should be inflicted if the offenses were committed within the specified time, "one month," i. e., thirty days. Nor would this im-

pose any hardship on the miner, or give the operator any undue advantage.

The ruling is, therefore, that "one month" in this agreement, means thirty days.

If either of the district presidents disagree with this ruling, they will please submit their reasons therefor in writing.

BENNETT BROWN,
Commissioner.

Copies sent to and endorsed by—

George Colville, District President No. 25.

George Richardson, District President No. 14.

Pete Hanraty, District President No. 21.

Thomas M. King, Vice-President District No. 21.

Pittsburg, Kansas, August 19, 1904.

A difference of opinion having arisen in regard to whether or not the brushing question in the northern part of Kansas is to be taken up and adjusted by the President of District 14 and the Operators' Commissioner, the representatives of the Miners and the representatives of the Operators agree to refer the matter to T. L. Lewis, National Vice-President of the U. M. W. of A., and W. C. Berry, Vice-President at Large for the Southwestern Interstate Coal Operators' Association, for settlement.

Executed at Pittsburg, Kansas, this 19th day of August, 1904.

In behalf of the Southwestern Interstate Coal Operators' Association.

B. F. BUSH, President.

S. W. KNIFFIN, Secretary.

In behalf of the miners:

J. G. RICHARDSON,

President District 14.

PETE HANRATY,

President. District 21.

GEO. COLVILLE,

President District 25.

ROBERT GILMOUR,

Secretary Joint Convention.

T. L. LEWIS,

National Vice-President.

DISTRICT AGREEMENT ADOPTED AUGUST 19, 1904 BY
SOUTHWESTERN INTER-STATE COAL OPERATORS' AS-
SOCIATION AND THE UNITED MINE WORKERS OF
AMERICA—DISTRICT NUMBER 25.

SUB-DISTRICT No. 1.

ARTICLE I.

Bevier, Ardmore, Huntsville, Santiago, Renick, Higbee, Elliott, Keota and Associated mines.

Section 1. (A) The price for mining in Bevier, Ardmore, Huntsville, Santiago, Renick, Higbee, Elliott, Keota and Associated mines, per ton for mine-run standard coal, 67 cents. For coal from 3 feet to 3 feet 6 inches, per ton, 72 cents. For coal from 3 feet to 3 feet 6 inches, per ton, 72 cents. Coal 3 feet and under to be considered deficient.

(B) The prices of every yardage and dead work shall be as follows:

(C) Seven-foot entry, \$1.09 per yard. Twelve-foot entry, 61 cents per yard.

(D) Bottom brushing shall be paid for at the rate of 61 cents per yard, where it does not exceed 15 inches to the rock.

(E) All 7-foot cross-cuts shall be paid for at the rate of \$1.09 per yard.

(F) All entries and cross-cuts, cross-shifted, shall be paid 26 cents extra per yard.

(G) Room turning shall be paid for at the rate of \$2.81 for a foot neck; all over 7-foot neck shall be paid \$1.09 per yard.

(H) Clay stratas or horse-backs shall be paid at the rate of \$1.24 per foot for every seven lineal feet, fractional parts in proportion.

(I) When a room is narrowed down to seven feet on account of clay, there shall be paid room turning and clay strata prices.

(J) Bench rock in Randolph and Macon counties (Lingo excepted) shall be paid as follows: An average of eight inches and over, which runs three yards or more with the place, 6 cents per ton additional to the regular mining prices, measurements to be made in four different places in the working place and an average made of thickness.

HIGBEE AND ASSOCIATED MINES—(LONG WALL WORK.)

Section 2. (A) The price for mining standard coal per ton, 95 cents. For coal three feet to three feet six inches \$1.01. All coal under three feet shall be considered deficient work.

(B) For room turning, room considered turned as soon as switch crib is in, \$4.51 each.

(C) For room opening, \$2.66 per side, and not over 23 feet to be considered a side from middle of road head. All over 23 feet from middle of road head shall be paid 71 cents per yard. Company to clean up and properly secure road head.

(D) Brushing in rooms and entries not to exceed twelve inches in thickness, to be paid 24 cents per yard.

(E) Building switch cribs, 59 cents each.

(F) Clay strata or horse-backs shall be paid at the rate of \$1.24 per foot for every seven lineal feet, fractional parts in proportion.

(G) The company shall lay all track in rooms and entries.

(H) When company desires miner to put in full cribs instead of turn wall, miner shall receive 59 cents for each crib in addition to room turning prices.

(I) Short ground in entries fifteen feet from middle of road head shall be paid 38 cents per yard in addition to brushing price. From fifteen feet to six feet from middle of road head shall be paid 8 cents per foot in addition to 38 cents and brushing price.

Where miner is required to turn his walls down working face, causing extra wall building, the miner shall be paid a price mutually agreed upon between mine foreman and parties affected.

(J) When a miner has a deficient place he shall receive no less than the maximum day wage scale.

HIGBEE LONG WALL—(SHOOTING COAL CONDITION.)

Section 3. (A) Miner shall receive \$1.37 per yard for wall building, and twelve inches of brushing, or company do the same.

(B) Entries where miner does brushing and wall building, the price shall be the same for room turning as in the breaking coal, \$4.51.

(C) Where company does brushing and wall building, the miner shall receive \$2.42 for room turning. Room considered turned as soon as switch crib is in.

(D) All other conditions to be paid the same as in breaking coal.

RENICK, HIGBEE AND ASSOCIATED MINE.

(For Hand-picked Coal, Room and Pillar Mining.)

Section 4. (A) For coal 3½ feet and over 95 cents per ton. Coal 3 feet to 3½ feet, \$1.00 per ton. All coal under 3 feet to be deficient work.

(B) Yardage for seven-foot entry shall be \$2.17 per yard, includ-

ing bottom in roadway not to exceed fifteen inches to rock; coal and bottom yardage to be inseparable.

(C) Yardage for fifteen-foot entry, one rib, one row of props to be set on rock each side of roadway, bottom brushing in roadway not to exceed fifteen inches to rock, the price shall be \$1.18 per yard. Coal and bottom yardage to be inseparable.

(D) Cross-cuts twelve-foot wide, 94 cents per yard for coal.

(E) Cross-cuts seven-foot wide, \$1.65 per yard for coal.

(F) For room turning, \$4.51 for seven-foot neck.

(G) For twelve-foot entry, two ribs, one row of props set on rock bottom, brushing in roadway not to exceed fifteen inches to rock, the price shall be \$1.42 per yard. Coal and bottom yardage to be inseparable.

(H) All shots shall be mined at least one-half where mining is of ordinary mining material.

LINGO—(LONG WALL.)

Section 5. (A) Lingo, including up to twelve inches of rock, per ton 83½ cents. From twelve to eighteen inches of rock per ton, 88½ cents. Where rock is over eighteen inches it shall be declared deficient.

(B) The prices of entries and gob rooms shall be \$1.46 per yard.

(C) The price on all coal except in entries and gob rooms shall be 2½ cents per ton in addition to mining price as fixed by Pittsburg scale. This includes the brushing of rooms according to the present custom.

WAVERLY.

Section 6. (A) The mining price for Waverly shall be as follows: For coal 3 feet 6 inches and over 70 cents per ton, and from 3 feet to 3 feet 6 inches 75 cents per ton. All coal under 3 feet to be considered deficient work.

(B) Six-foot entry, \$1.33 per yard.

(C) Whatever is omitted in the Waverly scale is referred to the operators' commissioner and district officers for adjustment.

VANDALIA, MARTINSBURG AND FARBER.

Section 7. (A) The price for mining shall be \$1.02 per ton.

(B) Room turning shall be \$2.83 per room; room considered turned as soon as inside corner wall is in.

(C) Miner to only build road wall, company to do all brushing above the hard ply.

(D) Yardage shall be paid \$1.49 per yard in clean coal and \$1.86

per yard in faulty coal, for eight-foot entry, and for single ribs 75 cents per yard.

(E) Miner having faulty room, known as slips, rolls, horse-backs or spars, shall be paid by the ton and the miner and pit boss to settle the price; and if the miner and pit boss cannot agree on the price, then the pit committee and the mine foreman shall agree on the price; and in case the pit committee and mine foreman cannot agree on the price, then the said miner shall be given another place, but under no circumstances shall any miner agree on a price below the maximum day wage scale.

(F) All iron track shall be laid by the company, miners will lay all wooden track, provided the rails and ties furnished are of good quality. Company will repair all track after once being laid by the miner. All iron track in rooms where no spikes are used shall also be laid by the miner.

FARBER—LOADING AFTER MACHINES.

(A) The price for loading coal after machines in Farber shall be 67 cents per ton for mine run coal cleaned as per Pittsburg agreement.

(B) The price agreed to shall be for coal of standard height and condition.

(C) Rooms shall be 30 feet for each man.

(D) When coal is not breaking the company shall pay extra or shoot it down.

(E) The provisions stipulated in section 1, article 3, paragraph F of our district agreement shall govern.

(F) It is agreed that the company shall keep the roads fourteen inches above the top of the box.

This agreement to remain in effect until March 31st, 1906.

Should either party be dissatisfied with the above provisions it shall be taken up for readjustment at our coming joint conferences.

PERRY.

Section 8. (A) The price of mining shall be \$1.02 per ton.

(B) Room turning shall be \$2.83 per room.

(C) Entries eight feet wide, \$1.49 in clean coal; \$1.86 per yard in faulty coal, and for single ribs, 75 cents per yard.

(D) All conditions governing Vandalia, Martinsburg and Farber shall apply to Perry, except brushing in entries and roads rooms, which shall be 2½ cents per inch for every inch.

Section 9. (A) In sub-district 1 all draw slate or false top shall be paid for at a price agreed upon between the mine foreman and the parties affected.

(B) All iron track in sub-district 1 shall be laid by the company.

SUB-DISTRICT No. 2.

ARTICLE II.

RAY, CLAY, LINN AND LEAVENWORTH COUNTIES.

Section 1. (A) In Ray and Clay counties, long wall work, the price of mining shall be \$1.11 per ton of 2,000 pounds. The price of loading coal after machines, 67 cents per ton.

(B) In Ray and Clay counties, where the machine takes more than 6 inches of mining below coal, and it is left for the loaders to clean up, they shall be paid at the rate of the maximum day wage scale.

(C) In Missouri City mine, where there is no slate coming down over the coal, and the machine takes more than 10 inches of mining below the coal, and it is left for the loaders to clean up, they shall be paid at the rate of maximum day wage scale. Dirt made by the machine shall be taken from the face by the shovelers.

(D) Road walls at Fleming, Camden and Missouri City shall be paid at the rate of 26 cents per yard single walls; 53 cents per yard for double walls when built with slate or rock.

(E) Rib cutting at Missouri City \$1.09 per yard.

(F) Roadway at Missouri City, Fleming, Camden and Richmond shall be kept brushed, so that men can load on top of the box not less than 12 inches, except in case of breaks, and that the rock brushing shall be kept up as near point rails as practicable.

(G) In Richmond 7-foot entry \$1.33 per yard; 12 or 14-foot entry \$1.18 per yard, and miners to get coal.

(H) In Richmond rib cutting 80 cents per yard.

(I) In Ray and Clay counties miners taken from the face to do company work, or doing company work at the face shall be paid \$2.42 per day.

(J) When a fall of slate or rock falls so as to obstruct the haulage in a room, the miner shall be paid for the time of cleaning the same up at the maximum day wage scale. When more than 1,200 pounds is down, it shall be optional with the company to clean up the same.

(K) Rock shooting in Richmond shall be \$2.27 per yard for shooting and gobbing, or pulled to switch.

Rock shooting at Camden shall be \$2.08 per yard, delivered at the bottom.

Rock shooting at Fleming it shall be \$2.08 per yard, same conditions now in effect to prevail.

Rock shooting at Missouri City shall be \$2.02 per yard for shooting and loading; same rules and customs now in effect to govern.

(L) The length of room for machine loaders at Missouri City shall be 40 feet under normal conditions.

(M) In Ray and Clay counties the company to take all coal, including the home box, from place where loaded. Miner shall take in empty box in the morning, provided there are empty boxes at the bottom, and shall pass empty boxes along the face during working hours.

(N) The length of rooms in Ray and Clay counties (pick mines) shall be 35 feet, and no more, to each miner. It is provided that if a miner is unable to keep up his room the pit committee and mine foreman shall have the miners in adjoining rooms to work down upon the same sufficient to keep working face straight, the above conditions to also apply to half rooms.

(O) In Ray and Clay counties company shall furnish employes coal for their own use at 8 cents per bushel at the mine.

MARCELINE, LINN COUNTY.

Section 1. (A) The price of mining shall be \$1.22 per ton of 2,000 pounds, mine run coal. Said mining price shall include not less than 24 inches of brushing, the proper building and care of working place, the delivery of coal loaded on the pit cars at the switch, the cleaning of the sulphur from the coal and the stowing of the same in the working place.

(B) Room turning \$4.51; entry turning \$4.51.

(C) 11 cents extra per ton shall be paid for cross shifting.

(D) For entry brushing 6 feet high, 6 feet wide, per yard \$1.60, or to the smooth that the company men now brush to.

(E) The company agrees to maintain all roadways from switch to face of brushing.

(F) It is agreed that whenever any slip, roll or other unusual condition occurs in the roof, the same shall be paid for by the company at a price that may be mutually agreed upon between the mine foreman and the miner interested.

MARCELINE FUEL CO.—SHOOTING COAL.

The prices and conditions now in effect in the Novinger field and stipulated in article 4, Secs. 1 and 2 of the district agreement; also prevailing customs, such as taking coal from the face by the company;

miners to receive their empties at the switch, and single work 30-foot rooms.

Under usual conditions draw slate comes with the coal, the following prices shall be paid by the company and accepted by the miner, viz.:

Draw slate 3 inches and less than 5 inches, 5 cents per ton.

Draw slate 5 inches and less than 10 inches, 9 cents per ton.

Draw slate 10 inches and less than 15 inches, 14 cents per ton.

Draw slate in entries, 3 inches to 5 inches, 24 cents per yard.

Draw slate in entries, 5 inches to 10 inches, 47 cents per yard.

Draw slate in entries, 10 inches to 15 inches, 71 cents per yard.

These prices apply to draw slate, but not to false top or clays stipulated in paragraph H of article 4, Sec. 2.

The above prices apply to room and pillar work, the customs and conditions stipulated also, and shall remain in effect until March 31st, 1906. And it is further understood that should either party to the above be dissatisfied, it may, if agreed to, be readjusted at future joint conferences.

LEAVENWORTH, KANSAS.

Section 4. (A) In the Carr mine the price of mining shall be \$1.00 per ton of 2,000 pounds of mine run coal until coal takes regular weight.

(B) At the Home-Riverside mines the price of mining shall be 95 cents per ton of 2,000 pounds, mine run coal.

A uniform price for dead work shall be as follows:

(A) Entry brushing \$1.22 per yard for entry 6 feet high and 6 feet wide at top and bottom.

(B) Sulphur in entry in addition to regular price of entry brushing shall be paid for sulphur in entries as follows: 6 inches at 53 cents per yard; 12 inches at 79 cents per yard; 18 inches, \$1.33 per yard; 24 inches, \$1.60 per yard; 30 inches, \$2.13 per yard; 36 inches at \$2.13 per yard.

(C) Sulphur in rooms as follows: 6 inches thick, 53 cents per yard; 12 inches, 79 cents per yard; 18 inches, \$1.33 per yard; 24 inches, \$1.86 per yard; 30 inches, \$2.12½ per yard; 36 inches, \$2.39 per yard.

(D) Brushing in rooms, 24 cents per yard for slate; 36 cents per yard for new rooms until the next room is turned 5 feet high from rail and 5 feet wide.

(E) All places that turns rooms and cuts off rooms, shall be paid for the same as entries.

(F) All straight rooms driven be paid same as entry; miner to push car to switch.

(G) Sulphur in coal shall be treated the same as last year.

(H) Room turning for each room turned and driven to break, \$4.25. For each entry turned and driven to break, \$6.38.

(I) Each new room to receive two cars every other trip, one for coal and one for dirt. Each entry to receive two cars every trip, one for coal and one for dirt.

(J) All falls in roadway and entry to be cleaned up by company. Also all falling rooms to be cleaned up by company.

(K) All new mines where working and not taking regular weight or break, the price now in force at the Carr Coal Company for mining coal entry and dead work shall govern until such time as said new mines have taken their regular weight or break, at which time the price for mining coal, entry and dead work in paragraphs "A" to "R" of this section shall take effect.

(L) Miner must not send out dirt, slate or sulphur if he has gob room, and must gob such dirt, slate or sulphur by throwing same diagonally toward the corner of room. He shall also build all walls in roadway of slate or sulphur rock. Failure to do the above shall be punished by not measuring or paying for brushing in room during current pay period.

(M) In case miner allows corner of room below 25 feet to get behind regular face of coal, he shall catch same up at once when ordered to do so by mine foreman. Upon failure to do so, shall forfeit his place.

(N) No room brushing to be paid for when sulphur is over 24 inches in thickness.

(O) Float rock shall not be taken up whenever mining parts from rock.

(P) All conditions and customs other than mentioned above to remain the same as last year.

(Q) Miners to receive coal for their own use at \$2.85 per ton delivered.

(R) In case of machine mining in Leavenworth county during the life of this contract, loaders after machines shall be paid the usual per cent. of the pick mining price, subject to the usual conditions of loading after machines.

SUB-DISTRICT No. 3.

ARTICLE III.

LAFAYETTE, JACKSON AND HENRY COUNTIES.

Section 1. (A) In Lafayette county, long wall work shall be \$1.11 per ton for pick mine coal. For loading coal after machine, 67 cents per ton.

(B) At Lexington, except at mines where the company is now pushing the coal, the company shall pay $8\frac{1}{2}$ cents per ton for wheeling to mule or motor junction, where the miner will get his empty car.

(C) At Higginsville the company to take all coal, including the home box, from place where loaded and place empties at same place.

(D) At Higginsville in lieu of pay for building road walls, the company agrees to furnish coal to their employes for their own use at \$2.20 per ton at the mines.

(E) Blackjack shall be paid for the same as coal at Higginsville, Wellington, Corder and associated mines.

(F) In Higginsville where machine cuts more than 7 inches from bottom coal to bottom of cut, the company to clean up dirt or pay the miner in whose rooms such cuts are made the maximum day wage scale for cleaning up the same.

(G) In Higginsville the price for entry driving shall be \$2.13 per yard, miner to have the coal.

(H) Fourteen-foot entry in Corder shall be \$3.73 per yard, the miner to have coal.

(I) In Higginsville five rails shall constitute a room in machine work. Where machine shovelers leave any dirt made by machine, the miner to receive the maximum day wage scale for cleaning the same.

(J) Dry corners in Lafayette county \$1.07 per yard.

(K) In Lexington the price for entry driving shall be \$2.65 per yard, and miner to have the coal.

(L) At Laning and Harris Company's mine near Wellington, known as the Carter mine, in lieu of paying for building road wall, the company agrees to furnish coal to their employes at \$1.95 per ton at the mines, during the life of this contract, for their own use; and the same conditions for wheeling as provided for at McGrew, viz.: $8\frac{1}{2}$ cents per ton to mule junction.

(M) Higginsville and Laning & Harris Company near Wellingt

the price for rock shooting shall be \$2.13 per yard for shooting and loading.

At McGrew's mines rock shooting shall be \$2.02 per yard.

At the Western Coal and Mining Company, Seawell and Glen Oak mines, rock shooting shall be \$1.60 per yard. Lifting bottom, \$1.33 per yard.

At Valley, Midway and Summit, \$1.33 per yard for rock and clay each, the same customs now in effect to prevail as to place and manner of delivery.

(N) In Lexington where a five-inch cutting machine cuts more than eight inches from bottom of sulphur to bottom of cut, or where a four-inch cutting machine cuts more than seven inches from bottom of sulphur to bottom of cut, the company shall clean up all dirt or pay the miner the maximum day wage scale for same. This does not apply where sulphur varies or gets thin in the back of the cut and the machine is run level. The company also agrees to have machine runners cut as close to the sulphur as possible.

(O) Machine shovelers shall clean up all dirt made by machine and stow it well back in the gob.

DOVER.

Section 2. (A) At Dover mines \$1.11 shall be paid for all coal sixteen inches and over; and for all coal between sixteen and thirteen inches, shall be paid \$1.25 per ton. All coal below thirteen inches shall be declared deficient, and be paid for under an agreement between the pit boss and miner; and in case they fail to agree, then between the pit committee and operator, and in case they fail to agree, then as provided in the interstate agreement.

(B) At Dover mines coal shall be wheeled from the face to the road head entries by the miner; and the empty boxes shall be taken by the miners therefrom to their respective places at and for 12 cents in addition to the mining price in the same manner as now at said mine.

(C) All slopes or roads shall be kept within 20 feet of the face not lower than 32 inches in height, as near as practicable.

When roads when carried over ten feet in width, the company shall clean up all dirt over ten feet.

Face brushing shall be done by the company, and shall be 6 inches above bed of pit car, as near as practicable.

JACKSON COUNTY.

(Brush Creek Mines.)

Section 3. (A) The price for pick mining shall be \$1.16 per ton or loading after machines, 70 cents per ton.

(B) In Jackson county, where there is no slate coming down over the coal, and the machine takes more than ten inches of mining below the coal, and it is left to the loaders to clean up, they shall be paid at the rate of the maximum day scale.

HENRY COUNTY.

Section 4. (A) The price for mining at Lewis Station shall be 95 cents per ton for mine run coal, under conditions now existing.

(B) The price for cutting around falls shall be 71 cents per yard.

(C) The price for mining in Brownington and Deepwater shall be 71 cents per ton for mine run coal, and for hand-picked, \$1.11 per ton.

(D) Dirt, shale or sulphur coming down with the coal shall be paid for as agreed upon between mine foreman and parties affected.

(E) For six-foot entry the yardage shall be \$1.18 per yard; for brushing the price shall be 94 cents per yard, the brushing to be five feet above the rail.

(F) Rolls, slips and horse-backs shall be considered deficient work and be paid for at a price to be agreed upon between mine foreman and parties affected.

(G) For room turning, \$2.13 for each door way. The price for making first break-through between rooms, \$2.13; miner to make all other necessary break-throughs.

(H) For twelve-foot entries, 76 cents per yard.

Scale for Windsor, Missouri, referred to District Convention.

SUB-DISTRICT No. 4.

ARTICLE IV.

Section 1. (A) Mining price for mine run coal, 2,000 pounds or ton, shall be for standard coal at the Manufacturers' Coal and Coke Company's mines, Nos. 1, 2, 7 and 50; Rombauer's mines, Nos. 1 and 2; Midland, No. 2, and Haven, No. 2, 72 cents.

Standard coal is understood to mean coal of present normal height and condition, and the prices shall be as follows:

Coal 39 inches or over, per ton, 72 cents; coal from 36 to 39 inches, per ton, 77 cents; coal from 30 to 36 inches per ton, 82 cents.

(B) For Midland No. 1, price of mining shall be 72 cents per ton for coal 39 inches or over; 77 cents per ton for coal 36 to 39 inches; 82 cents per ton for coal 30 to 36 inches. This is understood to mean coal of present normal condition.

(C) Should the owner of Midland No. 1 mine at any time during the life of this contract, change the plan and system of mining the vein from room and pillar to long wall, the scale and conditions provided in section 3 hereof for Stahl shall apply and govern at this mine during the remainder of the life of this contract; provided, that said scale for mining shall not be effective until, and as said mine takes weight and the ordinary normal workings of long wall mining is shown; and provided further, that if conditions should be developed different from the conditions at Stahl as affecting the labor of mining, then there shall be a readjustment of the scale of prices to be made by the operators' commissioner and miners' representative; provided further, that until said mine takes weight and the ordinary normal workings of long wall mining is shown, the mining shall be done by day work at \$2.42 per day.

(D) For Ninevah No. 3 the mining price shall be the same as Ninevah No. 1, where there is less than three inches of bench rock.

(E) The price of bench rock shall be as follows: Seven-foot entry, after there is three inches in thickness with bench rock, the company to pay 6 cents per inch per yard extra, running measurement.

(F) Twelve-foot entry, 2 cents per ton extra for every inch after three inches.

(G) Rooms after they are three inches in thickness with bench rock, 6 cents per inch extra for first seven feet; and after the first seven feet 1½ cents per ton per inch extra after three inches in thickness, measurements to be on the 1st and 16th of each month in front of road head.

(H) If, during the life of this contract, any new mine is placed in operation in mine run shooting coal in sub-district No. 4, in which the coal is of the same height as in either of the mines above specified, or in which the conditions are similar to those in either of the mines above named, the above and foregoing scale of prices for mining coal, cartage, room turning, day wages, dead work and all other general prices shall apply and be effective.

(I) If, during the life of this contract, any new mine is placed in operation in sub-district No. 4, in which the coal is not of the same height as in either of the mines above specified, or in which the conditions are dissimilar to those in either of the mines above-named, then a scale

ices covering all work in such new mine or mines shall be made by the parties to this contract and remain in force during the term hereof.

Entry yardage and room turning for the above named mines shall be as follows:

Section 2. (A) Seven and eight-foot entries per yard, \$1.66.

(B) Twelve-foot entries, \$1.12.

(C) Cross-cuts between entries, \$1.66.

(D) Room turning, \$3.09, each room to be seven-foot neck; all other at the rate of \$1.66 per yard.

(E) Cross-cuts between rooms shall be paid entry prices for similar width.

(F) Brushing in entries shall be paid for as follows: For the first fifteen inches or less, 57 cents per yard. For each additional inch, 4 cents. Entries shall be brushed to a width of four feet three inches at the bottom. The above prices apply to clay of ordinary hardness.

(G) The companies shall abandon bottom brushing in rooms, lay track in rooms, and take the loaded cars from the face of the rooms; the miner to push the empty car from the switch to the face, as he has done in the past and is now doing; provided, that the new system shall go into effect on or before November 20, 1903, and that until the new system is inaugurated, the miners shall continue to brush rooms as at present, and the operator shall pay 4 cents per ton on room coal in addition to the mining prices named in paragraphs "A," "B" and "D" of the schedule for sub-district 4, section 1.

(H) Clays, draw slate or false top shall be considered deficient work and be paid for at a price to be agreed upon between mine foreman and parties affected.

(I) For cross shifting entries or cross cuts shall be paid 26 cents extra per yard.

STAHL AND ASSOCIATED MINES.

Section 3. (A) The price for mining shall be for mine run coal, 44 cents per ton of 2,000 pounds.

(B) The price paid for dead work as follows: 7-foot entries, \$1.30 per yard; 12-foot entries, 85 cents per yard; 14-foot doorways, \$1.60 per yard.

(C) Entry brushing first foot in thickness, 44 cents per yard, and for each additional foot in thickness 34 cents per yard, or fractional part thereof.

(D) Low, faulty coal, \$3.38 per yard, company to get the coal, 26 cents per yard, miner to get the coal.

(E) Rock brushing in entries \$1.98 per yard.

(F) Rock brushing in rooms \$1.41 per yard.

(G) Room turning in room and pillar work shall be \$2.13 per yard. Miners shall brush to the rock when same does not exceed 3 feet in thickness and build two good walls.

(H) In long wall the miners shall push loads to first switch in room and pillar work to entry switch.

(I) Cribs shall be 53 cents each under the slate, and 18 cents each foot, or a majority fraction of each foot when over 4 feet high.

(J) Each working place to be furnished a pair of short rails.

(K) Cutting rib in long wall shall be paid 43 cents per yard.

(L) Slips that run parallel with the room or nearly so, shall be paid at the rate of \$1.07 per foot thick for every 15 feet, nothing for less than 3 inches in thickness. The miner and the pit boss shall decide whether slip is running parallel or nearly so.

(M) Double shifting narrow work shall be paid 26 cents per yard extra.

(N) Iron track shall be laid in all places by the company.

(O) In case a place gets behind in long wall the pit boss will see that it is caught up.

(P) When a room is driven 150 feet it shall be declared driven and if the skip entry is not ready to cut it off the miner shall have the best vacant place in the mine, provided he picks his place the first day and returns to his new branch when it is ready. If the miner desires for any reason to drive the room more than 150 feet, the company to take all coal from a point 150 feet from the working place and place empty cars at the same point.

(Q) When timbers are ordered by the miner before 10 a. m. they shall be delivered the same day, provided the mine continues in operation, or the company is responsible for the room.

(R) In lieu of room brushing the price for mining shall be 90 cents in place of 90½ cents per ton, or, in other words, 4½ cents extra for brushing.

TRENTON, GRUNDY COUNTY, MINES.

Section 4. (A) In Trenton, Grundy county mines, it is provided in lieu of the company taking the coal at the face, the miner shall be paid \$1.35 per ton and the miners shall push their coal to the face, and accept empties and room timbers at same place.

Brushing cross entries, \$1.07 per yard.

Brushing straight entries, 79 cents per yard.

-) Brushing in all rooms, 53 cents per yard.
-) Soapstone or bat in all rooms and entries to be paid for at the 5 cents per inch in thickness per yard in addition to regular price. Measurements to be made in center of roadway.
-) The men shall be furnished iron track for all rooms.
-) When any stump rock runs in top or bottom, \$1.07 shall be the same. When any stump rock runs in both bottom and top, shall be paid for same, and company to furnish powder to blast it.
-) When cross entries are turned off from straight, \$2.13 shall be paid for making room to turn such entry. Pushers shall take all dirt which can not be stowed in working places. Mine foreman and committee to determine whether miner can stow dirt or not.
-) Deficient places, wet places included, to be paid for by the day scale rate of wages, the pit committee and mine foreman to determine what is a deficient place. In case pit foreman does not desire to employ miner in such place by the day, he shall give him another place not deficient.
-) When a room is driven 175 feet it is considered driven up, if company desires to have same driven further they shall then pay 50 cents per ton additional.

ARTICLE V.

INSIDE DAY WAGE SCALE.

Section 1. Shot-firers under normal conditions.....	\$2 83
men (minimum), same as in District No. 21.....	2 42
mine runners	2 61
cutters	2 42
handlers of coal	2 42
mine shovelers	2 42
men with machine	2 23
examiners or gas men.....	2 33
men (minimum)	2 64
Work to be considered as completed when work reaches a point twelve feet from edge of the shaft.	
other inside day laborers.....	2 23

OUTSIDE DAY WAGE SCALE.

Hoist tender and night hoister, (nine hour shift).....	\$2 83
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ARTICLE VI

- GENERAL PROVISIONS.

Section 1. (A) That all necessary timber and rails shall be delivered at the working place by the company.

(B) That the price of powder shall remain at \$2.00 per keg in the life of this contract, and the powder shall be of the standard brand and of the best quality for the purpose for which it is used. Powder be delivered by company to driver at foot of shaft for conveyance miner's switch. Company's responsibility to end when powder is placed at such switch.

(C) The prices paid for blacksmithing in District No. 25 shall be the same as present contract, the miners' tools to have preference and the tools shall be properly sharpened.

(D) The pay shall be semi-monthly, and payable not later than 10 days after the close of each semi-monthly pay period. The company shall furnish a statement of accounts with receipt attached not later than eight days after the close of each semi-monthly pay period: and whenever an employe desires to leave the employment of the company shall receive his pay not later than three days after notifying said company of his desire to leave, company to commence paying not later than 4 o'clock p. m.

(E) When at any mine of a party to this contract there shall be three railroad cars empty and available or enough for one-half of the work to be loaded with coal, the men shall be required to enter the cars and put the same in operation.

(F) When a mine or any part of a mine is closed down, throwing men out of work, they are to be employed in any other mine that shall be in operation at that time by the same company. They are to be taken on when the place resumes work.

(G) When a man is taken from the face to do any day work his wages shall be \$2.42 per day.

(H) When a miner works at the face by the day his wages shall be \$2.42 per day.

(I) All deficient work not covered by this agreement shall be taken out at a price to be mutually agreed upon by the pit boss and paid. They failing to agree, the same shall be referred to the board of directors and superintendent. Should they fail to agree, the same shall be referred to the District President and Operators' Commission. Their decision to be given within fifteen days from the time of completion.

to the pit boss by the parties affected, which decision shall be final and binding.

(J) When a miner's place falls in after being properly timbered, it shall be cleaned up within twenty-four consecutive hours; if not the miner shall be given employment cleaning the same at the maximum day wage scale. Should the miner fail to give satisfaction while cleaning up said fall, he shall be given another place until said fall is cleaned up by said company; then the miner shall return to his place.

(K) There shall be no coal mined or loaded by the day only where there is no scale made to govern the same or deficient work.

(L) The color line shall not be a bar to employment.

(M) The words "maximum day wage scale," as used in this contract, mean \$2.42 per day.

(N) There shall be end-gates put in pit cars whenever miners desire them, the company to have a reasonable length of time to do the same.

(O) When a mine is closed down for any reason and men other than the regular day men are employed, the extra work shall be divided equally among men competent to do such work. Turn to be kept as provided for in section 8 of the Interstate General Provisions.

(P) For all broken cars the company shall give the miner average car of the miner's unbroken cars for that day.

RULES GOVERNING SHOT-FIRERS.

Section 2. When not over thirty miners are employed in one mine, the company shall make arrangements for firing shots, provided the men employed as shot-firers are paid the scale rate for that class of labor during the time they are so employed, and not work over eight hours each day. When from thirty to fifty miners are employed, shot-firers shall go to work at noon and work at their regular work, either as miners or day men, and shall be paid a half shift at the shot-firers' scale. When from fifty to one hundred miners are employed two shot-firers shall be employed whose duties shall be to fire shots exclusively.

When from one hundred to one hundred and twenty-four miners, inclusive, are employed, the shot-firers shall receive 7 cents per man for firing all shots over the one hundred men. When one hundred and twenty-five men are employed, the third shot-firer shall be employed, and one shot-firer shall be employed for each additional fifty miners. The question of fuse and squibs shall be left to local settlement. When a shot-firer fails to give satisfaction in the judgment of the mine foreman and pit committee, he shall be removed as shot-firer and offered some other employment in the mine.

ARTICLE VII.

Section 1. This contract shall be effective from September 1, 1904, to March 31, 1906, both inclusive.

Section 2. The parties to this contract hereby agree to meet in Kansas City, Mo., on the third Monday in March, 1906, for the purpose of formulating and agreeing upon a contract to cover the year commencing April 1st, 1906.

Witness our hands this August the 19th, 1904.

On behalf of the Southwestern Interstate Coal Operators' Association.

S. W. KNIFFIN, Secretary.

B. F. BUSH, President.

In behalf of the miners.

GEORGE COLVILLE, President.

WM. M. RICHARDS, Vice-President.

GEO. MANUEL, Secretary-Treasurer.

GEO. RICHARDS,

J. J. HEAD.

MARTIN COLLINS.

JOHN PHILLIPS.

APPENDIX.

OUTSIDE DRIVERS.

Decision Made October 12, 1903.

The day wage scale for outside drivers, who do not have to enter the mine, shall be \$2.18 per day. This is understood to mean drivers who do not have to enter the inside of the mine. If the driver's duty calls him at any time inside of the mine, he shall be paid the inside driver's wage, if that should happen even occasionally.

SHOT-FIRERS.

Decision governing rules covering shot-firers. Decision made December 29, 1903:

First: "Employed" means men at work in the mines for whom shots are fired.

Second: Enumeration daily or at stated periods as agreed between operators and shot-firers, based on the number of miners for whom shots are fired, whether they run coal or not.

Third: If the enumeration should show that fifty-one miners are ~~employed~~, as provided above, any day before shot-firers are employed ~~exclusively~~, as provided in agreement, they shall be paid full shifts for ~~working~~ shots from day of enumeration.

Fourth: When once fifty-one miners are employed, as provided ~~above~~, the two shot-firers shall be employed as provided for in the agreement, and shall be continually employed thereafter while there are fifty ~~miners~~ in the employment of the company at that mine.

Fifth: The above sytem and regulations to be applied when the ~~third~~ and every other additional shot-firer is employed, as provided for ~~in~~ the agreement.

DRAW-PLY AT VANDALIA, MISSOURI.

Decision Made October 17, 1903.

All draw-ply coming with the coal over eight inches, and up to fifteen inches, shall be paid for at the rate of one cent per ton per inch.

Draw-ply over fifteen inches shall be declared deficient, and be worked by the day, or at a price agreed upon by the pit boss, or mine manager and the parties affected.

This agreement is not intended to be made a basis of settlement at mines where draw-ply coming with the coal is an unusual condition.

WAGES OF ENGINEER, CARR C. M. & M. CO.—LEAVENWORTH.

Decision Made January 10, 1904.

That firemen were included in the provisions for outside day labor, in the paragraph of Article V, Section 1, of District 25 Agreement relating thereto, which states: "All other outside day labor not enumerated, \$1.91 per day; and, as it is further provided that all classes of labor, except engineers, the scale is based on eight hours; the above being facts, the firemen at Leavenworth are entitled to \$1.91 for every eight hours worked since September 1, 1904."

MULE FEEDER, CARR C. M. & M. CO., LEAVENWORTH.

Decision Made January 10, 1904.

As to mule feeder, as he is employed at underground labor, and as it was mutally agreed between the District President and the Superintendent, on November 19, 1903, that the mule feeder should devote that portion of his time during which he was not engaged feeding mules, to working at day labor, he shall be paid from the above date the price agreed to.

PUSHING HOME BOX, CORDER, MO.

September 26, 1903.

The Call Company will hereafter, during the life of the present contract, push all loaded boxes from the face of the room.

BRUSHING IN ROOM NECKS, NOVINGER DISTRICT.

Decision Made December 10, 1903.

The miner shall brush the room necks to the contract width provided for entry brushing, and the same level as the entry brushing for a distance of not exceeding nine feet, for which he shall be paid the same price as provided for entry brushing. And in the event the companies do not brush the slope by the time face of coal is twelve feet from end of brushing, the miner shall be permitted to do same at entry prices.

MINIMUM SPACE BETWEEN TOP OF CAR AND ROOF OF ROOM, NOVINGER DISTRICT.

Decision Made December 11, 1903.

That the minimum space between top of car and roof of room be twelve inches, and that each miner be furnished a pair of short rails to load his car upon, and that they be left loose.

MIDLAND NO. 2 MINE, NOVINGER, MO.—WHEN ROOMS ARE DRIVEN TO DEPTH OF 165 FEET.

Decision made April 25, 1904.

At Midland No. 2 only:

That when rooms are driven to a depth of 165 feet from corner of pillar to face of room, the company shall furnish miners with platforms for empties.

CONSTITUTION AND PREAMBLE OF DISTRICT NO. 25, U. M. W. OF A.

Revised August 31, 1904, at Kansas City, Missouri.

PREAMBLE.

There is no fact more generally known or more widely believed than *that without coal, there would not have been any such grand achievements, privileges and blessings as those which characterize the twentieth*

century civilization, and believing as we do, that those whose lot is to daily toil in the recesses of the earth, mining and putting out this coal which makes these blessings possible, are entitled to a fair equitable share of the same; therefore, we have formed "The United Mine Workers of America," for the purpose of more readily securing the object sought by educating all mine workers in America to realize the necessity of unity of action and purpose, in demanding and securing by lawful means the just fruits of our toil. And we hereby declare to the world that our objects are:

First.—To secure an earning fully compatible with the dangers of our calling and the labor performed.

Second.—To establish as speedily as possible, and forever, our right to receive pay for labor performed, in lawful money and to rid ourselves of the iniquitous system of spending our money wherever our employers see fit to designate.

Third.—To secure the introduction of any and all well-defined and established appliances for the preservation of life, health and limbs of all mine employes.

Fourth.—To reduce to the lowest possible minimum the awful catastrophes which have been sweeping our fellow-craftsmen to untimely graves by the thousands; by securing legislation looking to the most perfect system of ventilation, drainage, etc.

Fifth.—To enforce existing laws; and where none exist, enact and enforce them, calling for a plentiful supply of suitable timber for supporting the roof, pillars, etc., and to have all working places rendered as free from water and impure air and poisonous gases as possible.

Sixth.—To uncompromisingly demand that eight hours shall constitute a day's work, and not more than eight hours shall be worked in any one day by any mine worker. The very nature of our employment, shut out from the sunlight and pure air, working by the aid of artificial light (in no instance to exceed one candle power), would, in itself, strongly indicate that of all men, a coal miner has the most righteous claim to an eight-hour day.

Seventh.—To provide for the education of our children by lawfully prohibiting their employment until they have attained a reasonable satisfactory education, and in every case until they have attained fourteen years of age.

Eighth.—To abrogate all laws which enable coal operators to cheat the miners, and to substitute laws which enable the miner, under the protection and majesty of the State, to have his coal properly weighed or measured, as the case may be.

Ninth.—To secure, by legislation, weekly payments in lawful money.

Tenth.—To render it impossible, by legislative enactment in every state, for coal operators or corporations, to employ Pinkerton detectives or guards, or other forces (except the ordinary forces of the State) to take armed possession of the mines in case of strikes or lockouts.

Eleventh.—To use all honorable means to maintain peace between ourselves and our employers; adjusting all differences, so far as possible, by arbitration and conciliation, that strikes may become unnecessary.

CONSTITUTION.

ARTICLE I.—OBJECTS.

Section 1. It is the aim of this union to improve the material, intellectual and moral conditions of the toilers in and around the mines; we hold that these ends may be attained by securing better conditions, better compensation for the miners' labor, and by interesting them in the study of industrial and economic questions. We extend to all miners and mine laborers, without regard to race or color, an invitation to unite with us, that these ends may be attained.

Sec. 2. This organization shall be known as "District 25 of the U. M. W. of A.," and shall be composed of all local unions of the State of Missouri, and Leavenworth county, Kansas, and such other territories as may be added by the National Executive Board (excepting Bates, Vernon and Barton counties in Missouri).

Sec. 3. To secure all necessary appliances for the preservation of the health and lives of mine workers.

Sec. 4. To enforce existing laws, and when needed, to secure the enactment of new laws in the interest of mine laborers.

Sec. 5. Eight hours shall constitute a day's work, but not more than eight hours work shall be performed during twenty-four consecutive hours, nor shall more than forty-eight hours work be performed during any one week without the consent of the pit committee, and that all coal shall be weighed before being screened.

Sec. 6. To use all honorable means of maintaining peace between ourselves and our employers, resorting to a strike only when all peaceful means of adjusting difficulties have failed.

ARTICLE II—JURISDICTION.

Section 1. This union shall have jurisdiction over all the local unions in District 25, United Mine Workers of America.

ARTICLE III—OFFICERS AND THEIR DUTIES.

Section 1. The officers of this district shall consist of an executive board of seven members, three of which shall be president, vice-president and secretary-treasurer, and their term of office shall be for one year, unless otherwise determined, as hereinafter provided.

Sec. 2. It shall be the duty of the president to preside at all annual or special conventions of the district, and at all meetings of the executive board. He shall sign all bills and official documents, when satisfied of their correctness. He shall, with the consent of the executive board, fill, by appointment, all vacancies occurring in the district office, and in like manner may suspend or remove any district officer for insubordination, or just and sufficient cause, with the consent of a majority of the executive board. He shall send in circular form to all locals six weeks prior to the holding of an annual convention, such recommendations as he may deem wise or necessary to be acted on at such convention, so that delegates at such convention may have the advice of their respective locals on such recommendations. He shall, in the event that special conventions are called, issue to all locals within ten days after receipt of a proper petition, notice of such calls and the time set for such special convention, and they shall not be less than fifteen days nor more than thirty days after such calls are issued. He may attend in person, or send a district officer to visit local unions, when convinced that such services are required. He shall devote his time and attention to the affairs of the union; decide all questions of dispute concerning the meaning of the constitution; and exercise general supervision over its working as his judgment, or the exigencies of the case may require.

Provided, that no fines shall be imposed on any member or members unless written charges shall have been preferred against them and the same proven true.

Sec. 3. It shall be the duty of the vice-president to perform the duties of the president during his absence.

Sec. 4. The secretary-treasurer shall have charge of and preserve all books and documents and effects of the district office. He shall record all proceedings of all district conventions and of the meetings of the executive board, and shall keep copies of all important letters sent out by him. He shall receive and receipt for all moneys, pay all bills and current expenses when attested by the president.

He shall prepare and submit a quarterly report, with a certificate from the bank with which he does business attached, showing salary and expenses of each officer and employe in separate items; and a report

of all moneys received and disbursed; and he shall perform such other duties as may be assigned to him.

He shall give a bond of two thousand (\$2,000) dollars, secured by a reliable surety company, district to pay for filing the bond, for the safe-keeping of all moneys entrusted to him, which bonds must be approved by the district executive board and deposited with the president. But he shall not have more than five hundred (\$500) dollars subject to his order at any one time, all other funds must be deposited by him subject to the order of the executive board.

He shall quarterly send to all local unions in good standing the pass-word. It shall be the duty of all parties receiving the pass-word, in writing, to destroy it at once, and no one shall transmit it without proper authority.

He shall employ such assistance as may be necessary to conduct the affairs of his office, subject to the approval of the executive board.

Sec. 5. The meetings of the executive board shall be one each three months, unless called together in special session by the president, at which meetings the president and all other officers shall make a full and complete report of their work during the past three months, and submit the same for the approval or disapproval of said board; but it is herewith understood that all questions pertaining to a change of price or conditions in any part of this district shall not be made without the consent of at least a majority of said executive board. It is also understood that no part or parts of this or other sections shall in any way interfere with any contract, or contracts, made and entered into with any conference committee who may have been elected or selected by this or any future convention of this district.

Sec. 6. The official conduct of each officer of this district shall be a matter of consideration of the executive board during the interim of conventions; and should any officer give cause that would reflect on the dignity and best interests of our organization, it will be deemed sufficient cause for the suspension of such officer; and said board is hereby endowed with the authority to make such suspension, but when such suspension or suspensions are made, the secretary-treasurer shall notify all local unions in good standing, stating the cause of the suspension in detail. The salary of the officer suspended to cease from date of suspension.

Sec. 7. The executive board shall have power to call special conventions of the district, when, in their judgment, they deem it necessary. *But when petitioned by three or more local unions, after whose petition and statement of grievances has been sent to all local unions in good standing, and received a majority of all votes cast in favor of holding*

such special convention, they shall call and convene such convention as provided for in section 2 of article 3. It is further provided, that if a petition for a special convention is submitted to a vote of the local unions of the district and defeated the petition cannot again be presented to the executive board until four months have elapsed from the date of the presentation of the first petition.

Sec. 8. When the executive board has good reasons to believe that any local union is retaining any part of the per capita tax, or assessment due to the district or national organization, it is hereby empowered to investigate the matter, and shall have free access to the books of such local union, and if said reasons are well founded, such local union or unions shall be suspended from all rights and privileges of the United Mine Workers of America until such arrearages are paid.

Sec. 9. There shall be an assessment of 50 cents per month on each member in this district, for the six winter months, and no assessment for the six summer months, together with whatever is made by the national organization—the same to be used in times of strikes and lockouts. It is further provided, that should the 50 cents per month be insufficient the executive board may increase the same.

(Note.)—The six winter months in the above section means the months of September, October, November, December, January and February. The six summer months means March, April, May, June, July and August.

ARTICLE IV—MEMBERSHIP.

Section 1. The members of this union shall consist of miners and mine laborers, and other workmen, skilled and unskilled, working in and around the mines, except one mine manager, one night foreman, one top foreman, one company weighman and one boss driver, who have power to hire and discharge, and shall pay the following initiation fee.

Sec. 2. Top laborers and experienced miners shall pay the sum of ten (\$10) dollars initiation fee; inexperienced miners shall pay the sum of fifty (\$50) dollars initiation fee; United Mine Workers' sons from fourteen (14) to sixteen (16) years of age shall pay the sum of two dollars and fifty cents (\$2 50) initiation fee, other than United Mine Workers' sons between the ages of fourteen (14) and sixteen (16) years shall pay the sum of five (\$5 00) dollars initiation fee. In the event that top men who have not had one or more years experience desires to go down into the mine, he shall pay an additional initiation fee of forty (\$40) dollars. It is, however, provided that the executive board is hereby granted the power to obtain permission to grant dispensation

be made for them that is made for other members of the organization; all officers' salaries and expenses shall be paid semi-monthly, the terms of all officers to expire January 31 of each year.

ARTICLE VIII—NOMINATIONS AND ELECTIONS.

Section 1. The secretary-treasurer shall prepare nomination blanks for district officers and one national board member, and three delegates to the State Federation of Labor, and send them from his office to the local unions not later than October 15th, and the recording secretary shall fill in the names of the persons nominated by the locals for the various positions, and forward the same to reach the secretary-treasurer not later than November 1st. The secretary-treasurer shall, within ten days after the nominations are closed, notify all persons who have been nominated, and ask if they are candidates.

Sec. 2. Each of the four sub-districts, as divided by the convention, to elect its own board member.

Sec. 3. The secretary-treasurer shall compile a list of those accepting the nominations, giving the number of the local they belong to and send them out not later than December 1st, but no person's name shall be placed on the list whose consent has not been secured.

(Noe.)—The secretary, in compiling the list of candidates, shall arrange them on the ballot according to the number of nominations that they have received, the person receiving the most nominations is to head the list for the respective office that he is a candidate for, no person to accept nomination for more than one office.

Sec. 4. Local secretaries shall post notices at least one week prior to elections, failing to do so, he shall be fined five (\$5) dollars. All members of local unions shall cast their vote for their choice, in their regular meeting place under the charter, on ballots furnished for that purpose; said votes shall be counted and recorded in the presence of the local officers and forwarded to the district secretary-treasurer not later than the 25th day of December, on a returning sheet furnished for that purpose, keeping a duplicate of the vote cast for the use of the local union; final canvass of the vote shall be made by the auditors the first week in January. In the event it is found that one or more candidates have received less than a majority of all votes cast, then shall the two candidates for each office having the highest number of votes, be referred back to the local unions for a second ballot. The one receiving the majority in that case shall be declared elected, the official canvass to be compiled, printed and sent to each local union. Any member failing to be at his meeting place to cast his vote without reasonable excuse shall be fined one (\$1) dollar.

The above is not to apply to the election of delegates to the State Federation of Labor, but in their case the three candidates receiving the highest number of votes on first ballot shall be declared elected.

Sec. 5. All local unions shall preserve their original ballots for at least three months to be presented to the district officers, if called upon to do so.

Sec. 6. Three (3) auditors shall be elected at each annual election to examine the district officers' books semi-annually; but in time of trouble when relief funds are donated the auditors may call upon the district officers for a monthly statement on financial matters on strike situation, and further, it will be the duty of his auditing committee to see that district officers keep all accounts of strike funds and per capita separate; and shall make a final canvass of the district election.

Sec. 7. The delegates to the State Federation of Labor shall receive for their services three and one-half (\$3.50) dollars per day and actual expenses. The delegates to submit a report in writing to the district executive board at its first meeting.

ARTICLE IX—ANNUAL CONVENTIONS.

Section 1. The annual convention shall be held at such place and time as designated by previous convention.

Sec. 2. Each annual convention shall have power to expel from its body any member guilty of conduct unbecoming a representative miner; and official position shall not save any offending member.

Sec. 3. Delegates to the annual convention shall be entitled to one vote for every fifty members, or major fraction thereof, but no delegate shall be entitled to more than five votes.

Sec. 4. The basis of representation in annual or special conventions shall be made on the average membership upon which payment has been made for the last two months prior to the month in which the convention is held.

Sec. 5. No delegate shall be allowed a seat in the annual or special convention whose local is three or more months in arrears for dues or assessments to the District.

ARTICLE X—REVENUE.

Section 1. The revenue of this district shall be derived from local unions, viz.: ten cents per member per month per capita, fraction members pro rata; and provided further that ten cents per member per month be paid to the national organization. The district per capita shall be subject to call of the Secretary-Treasurer, and all of said per

capita tax shall be due not later than the 25th day of each month, for the previous month. Any local union which is in arrears for three months for the whole, or any part, of said local union membership, shall stand suspended until such arrearages are paid.

Sec. 2. The local Secretary shall fill out and forward to the District Secretary-Treasurer, on or before the 25th of each month, a report of all members in good standing in the local union for the previous month, together with all taxes and assessments due to the district office.

Sec. 3. In filling out the monthly reports, the local Secretary shall report to the District office, on blanks furnished for that purpose, the amount of money paid, and the number of members reported to the national office; the amount of money and number of members reported to the District Secretary-Treasurer, and shall sign a certificate showing that the report is for the full number of members in good standing in the local.

Sec. 4. Any member of the United Mine Workers of America, leaving the mine for other avocation in life, must pay to the local all dues and assessments created by the local, district and national organization, in order to retain his membership. A member three months in arrears must make application the same as a new member, and must pay the regular initiation fee.

Sec. 5. That where miners or miners' sons wish to attend school, that their dues and assessments be remitted for such time as they are attending school.

ARTICLE XI—CARDS.

Section 1. All mine and mine laborers must immediately deposit their transfer cards with local union having jurisdiction over mine where they are seeking employment, or sign an application for membership.

Sec. 2. No transfer card shall be issued to any member when the local union is three or more months in arrears to the national or district organization for dues or assessments.

Sec. 3. Transfer card must show that the member receiving it has paid all dues and assessments to date of issuing same, and also show at what labor he was employed, or his occupation.

Sec. 4. Secretaries must immediately make out transfer cards for applicants eligible to receive the same, and are clear of all charges. Any secretary or member making out a transfer card for anyone not eligible to same, or misrepresenting the occupation of applicant, shall be subject to a fine of not less than ten (\$10) dollars nor more than twenty-five (\$25) dollars.

Sec. 5. When a transfer card is issued to any member, it must be taken by him with some local union within three months after the date upon which it was issued to him, or else the card will become void. He can only become a member again by initiation as a new member and must pay the regular initiation fee.

Sec. 6. All local unions shall use the working card, to show that a person working in and around the mine is a paid up member of the organization, such cards to be furnished by the District. Card days shall be established at all mines and the mine committee shall see that each member has his card stamped with the official stamp of the local union, showing that the members dues are paid for the month previous to the card day. For the convenience of the financial secretary, members will deposit their working cards with the checkweighman or financial secretary on or before the 10th of each month. The financial secretary will then stamp the cards so that members can get their cards, at the regular meeting of the local union prior to the card day. Members will only have their cards returned to them at the regular meetings of the local union between the 10th of the month and the card day. All members failing to have their cards to present to the committee on card day shall be fined \$2.00; the financial secretary shall assess the \$2.00 fine on all cards remaining in his possession on card day, and then return the cards to the committee, so they can return the cards to the members fined.

(Note.) All men working at nights steady are excluded from this provision except that he must have his card stamped each month and present the same to the mine committee. Local unions are authorized to adopt local rules to govern members who are unable to attend the meetings through sickness or by reason of the distance that he may live from the local union.

ARTICLE XII—MISCELLANEOUS.

Section 1. No member shall be allowed to work at the face on idle days to make coal ready, and shall only be permitted to do work with the permission of the mine committee, the same to be in urgent cases. Shift hands may do shift work on idle days. The work of shift hands shall be divided equally between those receiving the same scale of wages, and the work to be equally divided among shift hands. No members except engineers, for whom a scale of wage is made, shall work more than a regular eight hours shift without first obtaining permission from at least two of the pit committee to do so.

Sec. 2. No district officer or representative shall enter into any agreement with operators whereby a local is affected, other than what is agreed upon at joint conference, without first obtaining consent of

the local affected. The district officers shall have the power to meet such new conditions as may arise, with the consent of the local union affected.

Sec. 3. It shall be the duty of each local union to have a statistician for the purpose of compiling a monthly report of the earnings and expenses of each miner and mine laborer and forward the same to the District secretary-treasurer once in each month and he shall also keep a copy of the same on file in the local, and it is further provided that any member refusing to furnish the said statistician with a statement of his earnings and mining expenses shall be fined not less than \$1.00 nor more than \$5.00.

Sec. 4. Whenever a local union deems it necessary for the protection of its finances to have a member's statement of his work that is issued by the company, that he give the same to the statistician designated by the local union at the mine or pay office that he may duplicate the same and return it to the owner.

Sec. 5. Upon a member of our organization seeking employment as a miner, he shall see the pit committee or check weighman at the mine where he desires to work as a miner and ascertain (if there is a member of our organization that is in good standing and is a practical miner out of employment and has not been discharged justly by the company operating said mine and has not committed an offense against said company justifying his discharge) and has applied for employment at said mine as a miner to the proper authorities and is in readiness to go to work in at least one day's notice from said company to either the check weighman or any member of the pit committee or the applicant himself, and if so, that he does not accept employment until the brother or brothers applying first under the above named conditions have been employed.

Sec. 6. All local unions must see that check weighman are elected by those contributing to their support at all mines employing thirty (30) or more miners.

Sec. 7. Any member guilty of contracting for or accepting less compensation for his labor than the prices agreed to in our contract with the operators, shall be deemed guilty of an offense and fined twenty-five (\$25) dollars for the first offense, each subsequent offense to be adjudged by the local union.

Sec. 8. The following shall be recognized as holidays by the United Mine Workers of America of District 25, and no work performed except in cases of emergency: Labor Day, Thanksgiving Day, Christmas Day, New Year's Day, Eight Hour Day, Decoration Day, State, National, School Election Days and Fourth of July.

Note: The holidays are as follows: Labor Day, first Monday in September; Thanksgiving Day, date set by the President of the United States by proclamation; Christmas Day, December 25, New Years day, January 1; Eight Hour Day, April 1; Decoration Day, May 30; National State and School Election Days.

Sec. 9. Any local union wishing to send out circular letters shall first furnish a copy to the district officers.

Sec. 10. No boy under fourteen (14) years of age shall be allowed to work in or around the mines.

Sec. 11. This constitution may be changed, amended or abrogated at any time by a majority vote of all locals, provided, that only members in good standing be allowed to vote.

This constitution goes into effect September 1, 1904, and remains in effect until March 31, 1906, unless otherwise amended under Section 11, Article XII.

(Signed.)

C. H. STAFFORD,
WM. APPLEBY,
JOE McDERMOTT,
T. E. BLACKSMITH,
J. H. DEMARCUS,
Committee on Constitution.

PRODUCTS BY COUNTIES.

ADAIR COUNTY.

No county in the State has shown a more rapid growth in coal production than Adair. This is evidenced by the record of the past fifteen years. In the year 1890, there was an output of 14,840 tons of coal, which sold for \$24,379. The product in 1895 was 24,540 tons, which in 1900 had advanced to 181,577 tons, while for the last four years the increase in product became even more decided and reached, in 1904, 658,558 tons, worth nearly one million dollars, or in exact figures, \$991,475.00. This great increase is mainly due to the opening up of the Chariton Valley coal field and the better transportation facilities afforded by the construction of the Iowa & St. Louis railroad, which runs through the county north and south and through the very center of the Chariton Valley coal fields. The road crosses, at right angles, several east and west railways, and also intersects some lines running north and northwest, thus enlarging the market for coal.

During the year 1904 there were 21 mines operated in this county, which employed a total of 1,173 miners in winter and 990 in the summer season, or an average during the year of 1,081 miners. If we include other help about the mines, the average would be 1,484 employees. The 658,558 tons of coal produced averaged, at the mines, \$1.54 per ton, the exact total being, as stated, \$991,475.00.

A brief description of the several mines operated in the county during the year follows:

GREAT NORTHERN FUEL COMPANY.

This company, of which W. S. McCaul is president and J. B. Grant superintendent, operates four mines in Adair county. Its general office is at Kansas City and local office at Novinger, Mo. This is a comparatively new company in this coal field, it having commenced operations in February, 1903. It controls, by lease and otherwise, about 12,000 acres of land north and south of Novinger, and the amount of its investment in coal property and plants is estimated at \$95,000.

Mine No. 1 is located one and one-half miles north of Novinger,

and connects with the Omaha, Kansas City & E. railroad by a spur track. The average thickness of the coal vein is 3 feet and 10 inches, and is reached by a shaft 86 feet in depth. A 14-foot Eagle Iron Works fan supplies ventilation to the mine. The room and pillar plan of working is employed and the coal blasted off the solid, 2,325 kegs of powder being used last year. It produced last year 43,251 tons of coal, which sold for \$58,526 at the mine. The mine is equipped with first-class machinery. In way of improvements, an escapement shaft, engine house and barn, and 10 houses for miners, were completed in 1904. John Kelly of Novinger is pit boss.

There is no record in this department of an inspection of the mine last year.

Mine No. 21.—This is a new mine, operations having commenced December 1, 1904. The mine is well equipped with machinery and appliances, ventilation being furnished by a River Side Iron Works fan, 14 feet in diameter. It is worked on the room and pillar system, the coal being blasted off the solid. Direct railroad connection, by means of a spur track, was recently secured.

Mine No. 23.—A new mine, with complete equipment, operations for coal having begun October 1, 1904. It is located three-quarters of a mile south of Novinger. The shaft is 63 feet in depth and the coal vein averages 3 feet and 10 inches in thickness, the room and pillar system being employed in mining. Embraced in the equipment is a double Eagle Iron Works hoister, connected with a 5-foot drum geared 3 to 1, a 2-flue boiler, 22 feet long and 44 inches in diameter, Fairbanks, Morse & Co. pumps, engine house, blacksmith shop, etc. The shaft is 7x14 feet in the clear and has a tower 55 feet high; hopper scales, so fixed that self-dumping cages can be put in at any time. An escapement shaft, size 6x8 feet, has been completed. The pit boss is Jno. McCullough.

Mine No. 31.—This is also a new mine, it being started and completed last year. Location, two miles south of Novinger, on the Iowa & St. Louis railroad, with which it has direct connections. The mine is equipped with modern machinery and safety appliances. The coal vein is 46 inches in thickness and reached by a shaft 96 feet in depth. In common with the other mines, the room and pillar method of mining is employed, 2,200 tons of coal being produced since October 1, when mining commenced, up to December 31, 1904. Sam Stephens is pit boss.

This is the first workable coal found east of the Chariton river, and opens up a new coal field in this country. The coal is of good quality.

KANSAS CITY MIDLAND COAL AND MINING COMPANY.

Mr. Bernard Corrigan of Kansas City is the owner of the property and the operator of the mines. The mine postoffice address is Novinger, Adair county. During 1904 the company operated two mines, each having railrod connection, by a switch, with the Omaha, Kansas City & Eastern railroad. The product of the mines is shipped to St. Joseph, Omaha and Kansas City.

Mine No. 1 is located about one mile north of Novinger. The coal, which has an average thickness of 38 inches, is reached through an 80-foot shaft. The mine is worked on the long-wall system and the coal shot off the solid, there being used by the miners last year 3,000 kegs of powder in this mine. Ventilation is supplied by a 12-foot fan. An average of 75 miners and 25 other men are employed. Having on file in this office no record of any inspection of this mine during the year 1904, we are unable to state actual conditions.

Mine No. 2 of the Kansas City Midland Coal and Mining Co.—postoffice address, Novinger, Mo. This mine is located about 5,000 feet north of mine No. 1, and the switch which connects No. 1 with the main line has been extended to No. 2, furnishing necessary railroad facilities for carrying the product to the market. It required a shaft 150 feet to reach the coal in this mine, but the coal averages four inches better than at No. 1, the average thickness being 42 inches. The machinery at this mine, as well as at No. 1, is up-to-date, and the same holds good with respect to the equipment generally. The mine is worked on the pillar and room plan and is ventilated by a 12-foot fan. The only improvement over 1903 was the institution of a 64-foot truck scale and a box car loader. The output of the two mines amounted in value to \$139,000. There is no record in this office of an inspection of this mine during the year 1904.

KIRKSVILLE COAL AND CONSTRUCTION COMPANY.

This mine is located a short distance northwest of Danforth, a spur switch connecting it with the main line of the Omaha, Kansas City & Eastern railroad. Mr. S. M. Pickler is the president of the company, with postoffice address at Kirksville, Mo. Mr. Marion Capps is the superintendant. The 3-foot vein of coal worked is 90 feet below the surface and reached by a shaft. The mine is worked on the room and pillar system, the coal being blasted off the solid. Ventilation is supplied by a fan having a diameter of 12 feet. During the past year an

escapement shaft has been sunk, a fan house erected, considerable development work done in the driving of entries, and a new track laid throughout the mine. The product of the mine is sold principally in the county. The property and plant is estimated to have cost \$27,000.

No record in this department of any inspection of this mine during the year 1904.

LEE'S MINE.

This mine is on the property owned by J. H. Miley and is operated by John Lee of Connelsville, Mo. The 44 inches of coal found is reached by a slope opening, the product being brought to the surface by horse power. Ventilation is furnished by a furnace and the mine worked on the room and pillar plan, the coal being blasted off the solid. This is a small mine, operated during the winter months only, for supplying the local trade. Three miners, two other helpers and a mule were employed for 105 days, the output being 1,262 tons, which sold at an average of \$1.75 per ton at the mine.

No record of an inspection during 1904.

MANUFACTURERS' COAL AND COKE COMPANY.

This company controls, by purchase and lease, large tracts of land in this county, in addition to which it owns and has leased large bodies of land in Schuyler county, and also in the state of Iowa.

Mr. Geo. W. Evans, with postoffice at Connelsville, is superintendent with a general supervision over all of the company's mining property. The total value of the output of the company in this State was \$439,543, or 44.53 per cent of the total value of the product of the county.

The shipment of coal from some of the mines commenced with the year 1902, and the production has steadily increased to the present, as new mines have been opened and the older ones have been further developed. Six mines were operated in the county during the year, embracing mines 1, 2, 3, 4, 7 and 50. A brief description of each follows: The description is not as full as we would like, owing to the absence of a single report in this office of an inspection having been made during the year 1904.

Mine No. 1 is located one mile south of Connelsville, with excellent shipping facilities over the Iowa & St. Louis railroad to markets northwest, west and south. This mine has a slope opening and enters a coal seam three feet nine inches in thickness. A ten-foot fan furnishes the air, but a recent inspection made by the present inspectors, develop

very unsatisfactory conditions in the matter of ventilation. Instructions were given for improvements greatly needed. The mine is worked on the room and pillar plan, and coal is blasted off of the solid, which resulted in the consumption of 3,339 kegs of powder during the year in the production of 59,862 tons of coal, or an average of one keg of powder for each 18 tons of coal mined. During the year there was installed one pair of track scales, and 11 new mine cars, constructed and placed in use. The amount invested in coal property at this mine was \$2,450, while the plant cost close to \$25,000. Petty grievances caused five strikes during the year. They were each of short duration.

Mine No. 2 is located one-half mile south of Connelsville, with shipping facilities over the Iowa & St. Louis railroad. The coal has an average thickness of 3 feet, 10½ inches, the same being reached through a drift opening and delivered to the tipple by steam power over a trestle elevated to such height as to permit the screening and loading into railroad cars. Air is furnished the mine by a 12-foot fan. Recent inspection made by our present Mine Inspector, H. J. Hamil, developed poor ventilation and gave as a cause contributing to the lack of air, indifferent under-ground management, and heavy falls in air courses. Instructions were given at the time of inspection for the betterment of the mine as well as No. 2, both of which were evidently greatly neglected. Mine No. 2 was operated 244 days in 1904, produced 32,103 tons of coal, which sold for \$48,154.50. The mine is worked on the room and pillar plan, and the coal blasted off of the solid, consuming during the year 1,661 kegs of powder.

The property and plant at this mine cost, it is claimed, \$21,500. Improvements during the year 1904 consist of the construction of 16 new pit cars and the installation of one screen complete.

Mine No. 3 is located at Connelsville, and has same shipping facilities and connections as mines Nos. 1 and 2. The coal will average 3 feet 11 inches in thickness, and is conveyed to the loading point through a slope opening and over a trestle to where it is screened and loaded on cars for shipment. Steam power is used and a 12-foot fan furnishes the air for ventilation. The mine is worked on the room and pillar plan, and the coal blasted off of the solid; 2,251 kegs of powder was consumed in the production of 39,923 tons of coal. The average number of miners was 52, all other help 24, making a total of 76 men. The output is shipped to points in Missouri, Iowa, Kansas and Nebraska. The improvements and additions during the year embrace a box car loader and set of track scales.

p. Mine No. 4 is located three-fourths of a mile north of Connels-

ville. Like all mines of the Manufacturers' Coal and Coke Company, it has shipping facilities over the Iowa & St. Louis railroad. The coal in this mine averages a thickness of 3 feet 10½ inches, and is delivered to the loading point through a slope opening and over a trestle. The mine was made ready for the shipment of coal in October, 1902. Operations were not, however, continued until September, 1903. The mine is ventilaed by the aid of a furnace, worked on the room and pillar plan, and in the production of 11,982 tons of coal consumed 826 kegs of powder. Thirty-six and 23 miners and 15 and 12 other help employed in winter and summer months.

Mine No. 7 is located three fourths of a mile northwest of Connells-ville. A spur switch 6,000 feet long connects it with the main line of the Iowa and St. Louis railroad. The coal averages 3 feet 10 inches in thickness, and is delivered to the surface through a shaft 88 feet in depth. The power employed at this mine is steam, while the air for ventilation is supplied by a fan 14 feet in diameter. Pillar and room, double entry, is the system in use here; the coal is blasted off of the solid, with 3,199 kegs of powder used in securing a product of 62,101 tons of coal. There were employed on an average for 237 days 101 miners and 24 other help. The product was sold in Missouri and states north and west, for \$93,151.50. The improvements for the year consist of a box-car loader, set of track scales, and one large barn.

Mine 50 is located one mile south of Novinger, connected with the Iowa & St. Louis railroad by a switch 5,000 feet long. The coal has an average thickness of 3 feet 10½ inches, which is hoisted through a shaft 68 feet in depth. The mine is equipped with excellent machinery, steam power being used and a 14-foot fan suplies the air for ventilating purposes. The pillar and room, double entry system of mining the coal prevails; the coal is shot off of the solid, and 3,392 kegs of powder consumed during the year for that purpose. The miners employed averaged 66, the other help 23 men, or a total of 89 employes; 57,870 tons of coal was shipped, which sold at the mine for \$86,805.00. The product is disposed of in Iowa, Nebraska and Kansas. One box car loader was installed during the year.

The amount invested in property in Adair county amounts to \$34,450. and in plants, \$180,000. These figures, however, do not include the value of property and plants at mines Nos. 52 and 53, as they are not yet in operation. The company owns and has under lease a large body of land surrounding mines Nos. 52 and 53, which is considered very valuable.

There is no record in this office of inspections made at these mines during the year 1904.

OAK BLOCK COAL COMPANY.

The mine of this company is on the property of A. W. O. Novinger, and operated by J. N. Bedford, whose postoffice address is Omaha, Neb. The mine is located just a short distance east of Stahl, on the line of the Omaha, Kansas City & Eastern railroad. The coal, which has a thickness of 3 feet and 4 inches, is reached by a drift and the product delivered at the dump by horse power, a tramway being used to haul the coal to the railroad. The coal is mined on the long-wall system and the mine ventilated by a furnace. An average of 47 miners and 21 other helpers was employed, producing an output which sold for \$27,226. The market for this coal is largely in Nebraska.

No record in this office of an inspection for the year 1904.

PARIS MINE.

This is a small mine, operated by John Paris of Connelsville. The coal, which averages three feet in thickness, is reached by a slope entrance, hand-power being used in mining. A furnace supplies ventilation to the mine. The room and pillar plan of operation is employed. Last year the output was 1,500 tons, which was sold to the local trade. The mine is worked in the winter months only.

SCOTT MINE.

D. C. Scott, whose postoffice address is Fegley, Mo., is the owner and operator of this mine, the output of which is sold to the local trade. The average thickness of the coal vein is four feet and it is reached by a slope entrance. The mine is worked on the room and pillar plan, the coal being blasted off the solid. Horse power is used. Last year the output was 1,800 tons.

ROMBAUER COAL COMPANY.

R. G. Rombauer, with postoffice address at Novinger, Mo., is the president of this company. Mines No. 2 and No. 3 were operated during the year, producing 108,042 tons of coal, which sold for \$167,056.20. About 260 men were employed, 200 of whom were miners. The product was marketed at Missouri river points, Kansas and Nebraska. The coal averages 40 inches in thickness in both mines, the same being reached by shafts 72 and 76 feet in depth respectively. Steam power is employed for hoisting, and ventilation in each mine by fans 12 feet
p

in diameter. Mine No. 2 is located three quarters of a mile north of Novinger, a spur track connecting the mine with the main line of the Omaha, Kansas City & Eastern railroad, which furnishes ample shipping facilities.

Mine No. 3 is located near the center of section 17, township 63, range 16, some two miles north of mine No. 2. This is comparatively a new mine, it having been opened in the fall of 1903. The machinery is first-class in every particular and every appliance used for the safety of the mine and the speedy and economical handling of the product. The mine is now about ready for the shipment of coal, it having been completed during the current year. The other improvements embrace the rebuilding of 18 cars for No. 2 and 30 new cars for No. 3, and three new buildings.

A strike on September 1, 1904, lasted ten days, during which time, 250 men were out of employment. This strike was settled by the president of district No. 25 of the U. M. W. A. of A. and the commissioner of the Operators' Association.

THE SHERIDAN COAL COMPANY.

The general office of this company is at Omaha, Neb., and the local office at Danforth, Adair county. This is a large mine, employing 112 miners in winter and 108 in the summer months, besides 54 other men in the winter and 59 in summer. The depth of the shaft is 85 feet and the coal vein averages 3 feet and 3 inches in thickness. A fan, 15 feet in diameter, supplies ventilation to the mine, which is worked on the pillar and room plan. The output, which last year amounted to 102,107 tons, is shipped to Missouri and Nebraska points. The amount invested in the plant and coal property is estimated at \$45,000. Thirty new houses for miners were built by the company in 1904. One strike, caused by a disagreement between the pit boss and men, lasted two days, and was settled by arbitration, and another strike of three days' duration, resulted from the same causes and settled in the same manner, occurred last year at this mine. There is no record in this department of any inspection of the mine in 1904.

STAHL COAL COMPANY.

The mine owned and operated by this company is located near Stahl, Adair county, on the O., K. C. & E. railroad, with which it has direct connections. C. B. VanPeleer, whose postoffice address is Stahl, is superintendent. In the past years the mine proved unprofitable, two com-

panies having failed in trying to operate it, but this was chiefly owing to poor supervision and methods of operation, as the coal is of good quality and averages 42 inches in thickness, while the natural conditions are favorable to economical mining. The present company started and completed a shaft last year, put in new machinery and equipments and had the railroad track extended to the mine. The coal is reached by a shaft 124 feet in depth. Ventilation is supplied by means of a furnace. The long-wall method of operation is employed, the coal being undermined. Last year the output was 16,196 tons. No record of an inspection of the mine in 1904.

AUDRAIN COUNTY.

Audrain county has an area of 680 square miles and is located on the eastern border of the North Missouri coal belt, the coal formation underlying the greater part of the county. The coal seams are broken and irregular in various places, as demonstrated by the numerous small mines which are worked in a limited way to supply home demand. The most extensive mines are at Farber, Martinsburg and Vandalia, where the Chicago & Alton and the Wabash railways traverse the coal fields and furnish shipping facilities for the product. Seven mines were operated during the year, descriptions of which are as follows:

AUDRAIN COAL COMPANY.

This company's mine is located near Vandalia, on the Chicago & Alton railroad, with which it has shipping connections. George Burge, whose address is Vandalia, is secretary of the company. The long-wall method of operation is employed, the coal being undermined. The coal vein is 30 inches in thickness, entrance to the mine being by a shaft 80 feet in depth. A furnace supplies ventilation to the mine. The output in 1904 was 9,595 tons. No record in this office of any inspection in 1904.

SUNNY SLOPE MINE.

This is a small mine on the property of O. F. Hofner, near Worcester, the product being sold to the local trade. It is operated by S. C. Clutter, whose postoffice address is Mexico. The coal, which is 30 inches in thickness, is reached by a shaft 35 feet deep, and is mined on the long-wall plan.

BEVAN MINE.

Wm. Bevan, of Laddonia, operates this small mine, the product of which goes to supply local demand. A shaft, 35 feet in depth, reaches the coal vein, which is about 30 inches thick. The long-wall method of operation is employed. A furnace aids in ventilation and horse power is used in hoisting.

MISSISSIPPI GLASS COMPANY.

Mine is located a little west of Vandalia and has shipping connections with the C. & A. railroad. C. Bauman of Vandalia is superintendent. The shaft is 65 feet deep and the coal vein averages 28 inches in thickness. A fan furnishes ventilation, steam power being used in hoisting. The mine is worked on the long-wall system. Underlying the coal is a good fire clay, which is taken out separately from the coal, the latter forming the roof while the clay is extracted. All the coal is consumed in the manufacture of brick, the brick plant being near the mine. The coal produced in 1904 was 4,450 tons. No record of an inspection of the mine in 1904 on file in this department.

STANDARD COAL AND MINING COMPANY.

The mine owned and operated by this company is located within the corporate limits of the town of Vandalia. Isaac Callen of Vandalia is president of the company. It is a co-operative company, composed of miners who work in the mine. The coal averages 26 inches in thickness, and is reached by a shaft 60 feet in depth. The product, which, in 1904, was 6,000 tons, is consumed in the neighboring towns. Besides putting in a new boiler and chutes, considerable repairs were done in and around the mine during the year. There is no record of any inspection of the mine in 1904.

VANDALIA-FARBER MINE.

The Lawder-Peterson Coal Company, of Vandalia, Audrain county, operates this mine, which has shipping connections with the Chicago & Alton railroad, and is located about a quarter of a mile west of the railroad depot. The average coal thickness is 28 inches; shaft 105 feet in depth. A fan, 8 feet in diameter, furnishes ventilation to the mine, which employs 75 miners, on an average, winter and summer. In 1904 the product was 17,780 tons, shipped to local towns. The company installed an electric *mining machine* and plant during the year.

KRIEGER COAL COMPANY.

Julius Krieger, whose postoffice address is Martinsburg, is the operator of this mine. This is a comparatively new mine, the shaft being sunk and mine equipped in 1903. The coal averages 2 feet and 8 inches in thickness, the depth of the shaft being 146 feet. A fan, 12 feet in diameter, to aid in ventilation, has recently been erected by the company, and escapement and air-shafts were also completed in 1904. The mine is on the Wabash railroad, and the product is shipped to local points between Centralia and St. Charles.

BARTON COUNTY.

Barton county is among the large coal-producing counties. Its surface is 612 square miles, the greater portion of which is underlaid with coal. In many places the covering is shallow and the coal is obtained by stripping the ground. The county is traversed by three railroads, the Frisco, Missouri Pacific and Kansas City Southern, and is thus provided with good shipping facilities. The product of the mines for the year was 199,973 tons, this being the greatest annual output ever made in the county, with the exception of the product for 1902, when 200,433 tons were produced. The product for the year 1904 shows, when compared with the year 1903, an increase of output amounting to 14,716 tons, and an increase in the value of the production of \$31,855. From present indications the current year will reach the high-water mark of the county's output.

The Pittsburg Coal Company, of Englevale, Kansas, opened up a mine on the Haller Brother's property, near the State line, which it calls "The Imperial." The coal at this mine is reached through a shaft 35 feet in depth, and is 2 feet, 8 inches in thickness. The close of the year found this company with only six rooms ready to mine in, the work previously done having been confined to narrow work, and the coal shipped was only that secured in the preparatory work. Mr. D. S. Willey is the superintendent, with postoffice at Englevale, Kansas. This is a new mine, and not having been visited by the late State Mine Inspector, our record is necessarily brief. The present inspectors will doubtless furnish a full and complete statement of conditions, plant, etc.

The following small operators are mining near Liberal, and receive their mail at that point.

C. C. Durham operated during the year a strip-pit on the land of James Campbell.

George Mellor operated in a small way on the land of W. H. Curless. It is a slope opening, but as it is pick work and the mine surrounded by strip-pits, the operator found competition almost too much for him during the year to make the output desired.

C. A. Richards worked a strip-pit on the land of Louis Richards, producing a small amount of coal.

Joseph Travis operated on his own property. The coal is reached 30 feet from the surface by a shaft. The product of these mines goes to supply the local trade.

M. M. Spear works a strip-pit on his own property, located near Lamar, at which point he receives his mail. The coal is between 12 and 14 inches in thickness.

Further detailed information respecting men employed, output, etc., of these small mines can be secured by reference to the table on Barton county, found elsewhere in this volume.

HAYNES COAL COMPANY.

This company operates a mine on a 307-acre tract of land owned by W. D. Konantz, of Arcadia, Kansas. The mine is located within a few hundred feet of the Missouri-Kansas State line, a short spur track connecting it with the 'Frisco railroad. The coal seam has an average thickness of 32 inches and is reached by a slope, two mules being employed to haul the product to the surface, where it is weighed and loaded on the cars for shipment. This mine was operated 180 days during the year 1904, the product being sold for \$5,600.

There was no record in the Bureau of any such mine within the boundaries of this State, and the notice in this report is due entirely to results of inquiries made by the present Coal Mine Inspector, R. S. Thomas. Report having reached him of coal mines located near the Kansas-Missouri line, the underground work extending into this State, the coal being brought to the surface through shafts on the Kansas side, Mr. Thomas communicated with James A. Orr, chief coal mine inspector of Kansas, following which a meeting was arranged for the two inspectors at Arcadia, Kansas, in order to investigate the situation. In the first week of April, 1905, the inspector of this State and the secretary of the Bureau arrived at Arcadia, and finding that the Kansas inspector would not arrive till noon, it was decided to look over the situation in the interim. The mine to be investigated was but a short distance from Arcadia, and we were not long in reaching it. Greatly to *our surprise we found that the mine had just suspended operations and that the last load of machinery was leaving the Haynes mine.* We soon

discovered this mine, including the shaft, to be entirely on Missouri territory, so that our information to the effect that the shaft was on the Kansas side was erroneous. An examination of the mine was made, and the fact revealed that it was being operated contrary to our Missouri laws. Mr. Haynes, the superintendent of the mine, was present and treated us with great kindness and courtesy. He informed us that it was quite possible he would renew operations in the near future, but he was informed by the inspector that he could not reopen and do further mining until he changed his plan of underground work.

Mr. Orr, the Kansas Mine Inspector, arrived at noon and we proceeded to investigate several other mines along the State line, but at neither mine did we find conditions to fit the story which each of the inspectors had heard. We learned of a mine which some years ago did encroach on Missouri territory from the Kansas side, but found no such condition existing on the occasion of our visit.

We desire to acknowledge our obligations to Mr. James A. Orr, Chief Inspector of Coal Mines for the State of Kansas, for the interest he displayed and the kindness shown us on this trip. We wish him success in the effort he is making to improve conditions in the Kansas mines, some of which we have had experience with in this State, and believe the improvements contemplated will prove of material benefit.

It was while on this trip that we encountered the J. H. Scott mine.

J. H. SCOTT MINE.

This mine is a new one and located near the State line, with post-office at Arcadia, Kansas. It has shipping connections with the P. & G. railroad by means of spur track. At the time of our visit the mine was not found in operation, nor was there anyone present to give us any information. We found, however, that some changes would have to be made before operations could proceed much further. The scales were not in adjustment; no bonnets on the cages or safety catches on. The tibble is new, but quite small. A new shaft was partitioned off on one side for air. A steam boiler, hoister and scales were all that we were able to see in the way of equipment.

LAVERY COAL COMPANY.

This is a strip-pit, operated by W. J. and A. G. Lavery, at Liberal, Barton county. The coal is all used by the Kansas smelters. In 1904 *the product* was 10,000 tons. An average of 16 men were employed, *winter and summer*, besides a number of teams. At the present time *the company* is not doing any work at this mine.

PATTERSON MINE.

W. W. Patterson, of Pittsburg, Kansas, operates a strip-pit located near the Kansas line. The average thickness of the coal vein is 3 feet. In 1904 the output was 4,800 tons, which was sold to the smelters and the local trade.

BLIXEN MINE.

This is a strip-pit, on the property of Mr. Sandhagen, near Liberal, and worked by Short & McKenzie, of Liberal. The thickness of the coal vein averages 3 feet and 4 inches. The product, which in 1904 was 300 tons, is sold to the local trade.

GOODWIN MINE.

Mine is on the property of Florence Scherard, near Liberal, and operated by G. W. Goodwin, of Fuller, Kansas. The coal averages 28 inches in thickness, and is reached by a slope entrance, the room and pillar plan of operation being employed. An average of 13 men are employed at the mine. The product, 3,240 tons in 1904, is shipped to Kansas City.

WALSER-HILL MINE.

This is a strip-pit, on the land of G. H. Walser, located near Liberal, and operated by Walser & Yoke, whose postoffice address is Liberal. An average of 10 men are employed, winter and summer. The coal averages 28 inches in thickness. The product is shipped to Kansas City.

HALL & FLETCHER.

Mine No. 9, located about one mile north of Minden, on the property of the Western Coal and Mining Company, is operated by Hall & Fletcher, of Minden mines. The mine has connections with the Missouri Pacific railroad by means of a switch about a mile in length. The coal vein is about three feet in thickness and reached by means of a slope. It is worked on the pillar and room plan and the coal blasted off the top, 1,040 kegs of powder being used in 1904. A fan, 10 feet in diameter, furnishes ventilation. The mine employs 30 miners, winter and summer, besides 6 other men, and the product is disposed of to the Western Coal and Mining Company, the owners of the property.

THE WEAR COAL CO.

This company operates four mines in Barton county, two being located at Minden and two near Alston. A. B. Kirkwood is the general manager and superintendent.

Mine No. 10 is located one mile west of Minden and connected with the Missouri Pacific railway by a long switch from the main track to the mine. The shaft is 38 feet deep and thickness of coal vein about three feet, the pillar and room system of operation being employed. A fan, 12 feet in diameter, furnishes ventilation to the mine. In 1904 the number of kegs of powder consumed was 4,285. During the winter months 95 miners were employed, and in summer 87. The output, which in 1904 was 66,519 tons, is shipped to Missouri, Kansas and Nebraska points.

Mine No. 14 is located at Alston. Depth of shaft, 23 feet; thickness of coal vein, three feet. The pillar and room method of working is employed and coal blasted off the solid, 626 kegs of powder being used during the year. Ventilation is aided by a fan 10 feet in diameter. This mine has been shut down since September 1, 1904.

Mine No. 15, leased by Hassler & Turnbull, is also located near Alston. The average thickness of the coal here is three feet, reached by a shaft 45 feet deep. Natural ventilation, aided by a steam jet. Room and pillar plan of operation; coal blasted off the solid; 720 kegs of powder consumed during year. Mine employs 12 miners summer and winter, besides four other men.

Mine No. 18. This is a new mine, opened and equipped with new machinery complete. Mining was commenced in December, 1904. The coal vein here is also three feet in average thickness and reached by a shaft 45 feet in depth. Steam power is used for hoisting purposes. This promises to be a productive mine.

No record of any inspection of either of above mines, during 1904, on file in this department.

WESTERN COAL AND MINING CO.

The general office of this company is in the Laclede building, St. Louis, and local office at Minden Mines. B. F. Bush is the general manager. Mine is known as Minden No. 8, located about one mile north of Minden on the Missouri Pacific railway, with which it has connections by a spur track. The average thickness of the coal is three feet, reached by a shaft 96 feet in depth. Mine is ventilated by means of a 16-foot fan. The mine is worked on the pillar and room plan, the coal

being blasted off the solid. In 1904, 3,764 kegs of powder were used. The product is sold to the railroads and also shipped to Missouri and Kansas points. Amount invested in coal property, \$101,650.00, and in plant, \$48,822.00. A strike, lasting however, but two days, occurred here in 1904, caused by the men insisting on being hoisted in and out of mine instead of walking up and down the man-way. The trouble was ended by the granting of the request. No record in this office of any inspection of mine during 1904.

BATES COUNTY.

Bates county has a surface area of 873 square miles. As a coal producing county it has long stood in high rank among the coal producing counties of the State. Its annual output for the year 1904 was 152,495 tons, placing the county sixth in rank among the greatest coal producers. In 1891 the product of the county reached its high water mark, with an output of 726,273 tons. The condition of the county may be judged by the following table of output during the past sixteen years.

Bates county production and value of the same, 1889 to 1904, inclusive.

Year.	Tons of coal mined.	Value of product.
1889.....	729,688	\$755,278 00
1890.....	671,878	718,089 00
1891.....	726,273	762,740 88
1892.....	650,924	690,927 85
1893.....	627,514	700,562 56
1894.....	291,271	305,198 00
1895.....	252,281	284,908 00
1896.....	375,800	387,838 00
1897.....	410,304	378,616 00
1898.....	343,878	314,221 00
1899.....	441,983	408,088 00
1900.....	368,577	368,291 00
1901.....	372,218	386,560 00
1902.....	350,061	381,508 00
1903.....	176,877	244,161 00
1904.....	152,495	212,801 00

J. T. ACKERMAN & CO.

This company has been operating a strip pit near Hume, Bates county, but only in a small way, only two men being employed. The average thickness of the coal is two feet and ten inches, the product being shipped to Kansas City. J. T. Ackerman, whose postoffice is Hume, is the superintendent.

AMSTERDAM COAL CO.

Mine No. 1, owned by the above company, is located at Amsterdam, Missouri. Entrance to the mine is by a shaft one hundred feet in depth,

the coal averaging 2 feet and 10 inches in thickness. The mine is ventilated by means of a fan seven feet in diameter, steam power being used in operating. The pillar and room plan of operation is employed, the coal being blasted off the solid. Fifteen miners are employed in winter, the mine not being operated in summer. The output, which was 1,980 tons, is shipped to Kansas City. In way of improvements a top house, engine and boiler house, shop and store room for tools were constructed. The general office of the company is located at 115 Navajo building, Kansas City, Mo., the president and general manager being Mr. G. Meriwether.

J. T. ENGLES.

The mine operated by J. T. Engles is located at Rich Hill. The mine is entered by means of a shaft 30 feet in depth and also by two slopes. The coal vein averaging four feet and four inches in thickness. Horse power is used in operating, and the pillar and room plan of operation is employed. Seven miners are employed in winter and five in summer, besides two other men winter and summer. The output is shipped to Kansas and Nebraska points and is also sold to local dealers. The two slopes referred to were put in during the year.

FERGUSON MINE.

This is a small mine operated by C. E. Ferguson, whose postoffice is Rich Hill, the mine being located near that town. It is a strip-pit, the average thickness of the coal being three feet. The mine is worked in winter only, seven men being employed. The product is shipped to Missouri and Kansas points.

FLEMING COAL CO.

The president and general manager of this company is L. T. Fleming, whose postoffice is Rich Hill, where the mine is located. The coal averages three feet and six inches in thickness and is reached by a strip-pit, ten men being employed in winter and five in summer. The output is sold mostly to local dealers.

THE GEE MINE.

This mine is located near Rich Hill and is operated by J. A. Gee, whose postoffice is Rich Hill. The coal, which averages three feet and six inches in thickness, is reached by a shaft 25 feet in depth. Ventilation is aided by a furnace. The pillar and room plan is used. Six to

eight men are employed winter and summer. The product of the mine is shipped to Missouri, Kansas and Oklahoma Territory points.

K. & W. COAL AND MINING CO.

This company's mine is located about two miles north of Worland, Bates county, the name of the superintendent being C. B. Walden, with postoffice at Worland. The coal vein is three feet in average thickness and is reached by means of a shaft 42 feet in depth. The pillar and room plan of operation is employed and the coal is blasted off the solid. It is a comparatively new mine and was worked but for a short time during the year. Railroad connection is secured by a switch spur track constructed in 1904.

HOLLAND COAL CO.

The mine owned by this company is located at Howard, Bates county, and has only recently been developed. The coal averages three feet and two inches in thickness and is reached by a shaft 35 feet in depth. Horse power is employed and the pillar and room plan of operation is used. Natural ventilation. Only a small amount of coal was mined in 1904, as the plant was not yet fully completed and equipped. Mr. O. T. Holland, with postoffice at Rich Hill, is superintendent.

NEW HOME COAL COMPANY.

Mine No. 1, owned by this company, is located some eight miles northwest of Rich Hill and about three miles south of Foster. The president of the company is W. B. Williams, and the superintendent, James Price, whose postoffice address is Rural Free Delivery, No. 6, Rich Hill. It is a comparatively new mine, being opened up in 1903. The coal vein, the average thickness of which is four and a half feet, is reached by a shaft 250 feet in depth. Steam power is employed and a twelve-foot fan furnishes ventilation to the mine. The pillar and room method of operation is used, 2,296 kegs of powder being used in 1904. At the close of the year the company had 150 miners employed, the number of days the mine was operated during 1904 was, however, only 32. Nearly all the output, which was almost 52,000 tons, is purchased by the Frisco Railway Co. The company sunk an air shaft during the year and completed a new store building.

PEELER MINE.

This mine is located a short distance northwest of Rockville, Bates county, and the operator is D. D. Peeler, with postoffice address at

Appleton City, St. Clair county. It is a strip-pit, the average thickness of the coal being four feet and ten inches. Horse power is used; ventilation, natural. From eight to ten men are employed in the summer and two or three in winter. The output is sold to local dealers.

REES COAL COMPANY.

The mine of this company is located near Rich Hill, and the coal is reached by a drift from a strip-pit. The average thickness of the coal is four feet and the pillar and room plan of operation is used. In winter eight miners are employed and five in summer. The coal is shipped to points in Missouri and Kansas. In 1904 the company worked out odd pieces left from mines previously worked by the R. H. C. M. Co. The superintendent is J. C. Twaddle, with postoffice at Rich Hill.

RICH HILL COAL AND MINING COMPANY.

Mine No. 15, operated by this company, located near Panama, Bates county, was worked out and operations suspended August, 1904, and the plant and equipment has since been transferred or sold. The mine produced 29,403 tons of coal in 1904. B. F. Bush is the general manager of the company, whose general offices are located in the Laclede building, St. Louis.

SPENCER BROS.

This company operates three strip-pits near Rich Hill and employ six men in winter and eight in summer. The coal is from four to six feet in thickness, and the company employs from six to eight teams in scraping and hauling. The output is shipped to Missouri and Kansas points, some being sold to local dealers.

RICH HILL POSTOFFICE.

W. H. Lowder operates a drift near Rich Hill on the pillar and room plan. The mine was started in 1904. About 950 tons of coal was extracted. Mr. Lowder also worked the Tarver & Daily mine; that is to say, he took out a few of the pillars left by the Rich Hill C. M. Co.

David McComb operates a strip-pit and drift one mile northeast of Rich Hill, and employed six men for some three months in the winter of 1904. The output is hauled to Rich Hill in wagons and sold to local dealers.

Heck & Jones operated a small mine near Rich Hill up until August, 1904, when they quit work. They took out only 850 tons during the year.

Pearson & Watson operated a strip-pit located about three miles northwest of Rich Hill, but the mine was worked out and abandoned last December. The company employed 31 men.

HUME POSTOFFICE.

Selders Bros operate a strip-pit near Hume, and employ from three to six men in winter. The amount of coal extracted in 1904 was very small.

J. A. Harris operates a strip-pit a short distance south of Hume, the average thickness of the coal being 30 inches. The mine is on land owned by C. A. Shaw.

SPRUCE POSTOFFICE.

John W. Martin is working a small mine three miles east of Spruce on the pillar and room plan. The coal is sold to consumers in the near neighborhood. The mine is run in the winter only.

MONTROSE POSTOFFICE.

Robert Sutherland operates a strip-pit in Deepwater township, Bates county. The coal averages 18 inches in thickness. The output, which is small, is consumed in the neighborhood.

WORLAND POSTOFFICE.

Dan Morehouse operates what is known as the Eagle mine on the property of W. J. Mullies & Co. The coal, averaging 36 inches, is reached by a shaft 42 feet in depth. The mine has only recently been purchased by him and there has been little coal extracted as yet.

FOSTER POSTOFFICE.

D. H. Arbogast is operating a drift on the property of the Walnut Lard and Coal Co. The mine is worked on the pillar and room plan. He took out some 2,000 tons of coal during the year.

BOONE COUNTY.

Boone county has a surface area of 680 square miles. Coal is a natural product of the county and has been mined at a number of places for many years in the past. The county is underlaid almost entirely by *the coal measure formation*, and mining in a small way has been carried

on in nearly every township. The output from the county during the year was 35,865 tons, valued at \$65,408. Following is a description of the mines now operated.

PRATHER COAL CO.

This company operates three mines, about four miles north of Columbia, entrance to one mine being secured by a shaft fifty-six feet in depth, and the other two by slopes. The mines are operated on the pillar and room plan, the coal being extracted by undermining. The average thickness of the coal in all three mines is three feet and six inches. In winter 35 men are employed and 18 during the summer months. The output of the mines is nearly all sold in Columbia and neighboring towns. The company opened up one slope in 1904 and made some small improvements in the other mines. There was a strike at these mines which lasted six days, because of a misunderstanding between the operator and the local union, but the trouble was settled satisfactorily.

BLACK DIAMOND MINE.

Marvin R. White, with postoffice at Clark, Mo., is the operator of this mine, which is located at Rucker, Boone county. The coal, which averages three feet and ten inches in thickness, is reached by a slope opening. Hand power is used; ventilation, natural. The pillar and room method of operation is employed and the product extracted by wedging and undermining. The output is sold at Sturgeon and neighboring points. A new slope was started during the year, and a new car added.

BANNER COAL COMPANY.

This mine is located near Brown Station and has shipping connection with the Wabash railroad. Entrance to the mine is secured by a shaft 157 feet in depth. It is worked on the pillar and room plan, and the coal blasted off the solid. The shaft was sunk in 1903 and the mine well equipped with machinery. A new fan was installed in 1904 and an air shaft sunk. The output is sold at Columbia and neighboring towns. W. T. Anderson, Columbia, is secretary of the company.

COLUMBIA COAL AND MINING CO.

The mine operated by this company is located at Switzler, some *four miles north of Columbia* and has shipping connection with a branch *of the Wabash railroad*. The coal vein, averaging three feet and six *inches in thickness*, is reached by a shaft 130 feet in depth. Steam power

used in operating the mine and ventilation is supplied by a ten-foot shaft. Both the pillar and room and long wall methods of extracting the coal are employed. The company employs 25 miners in winter and 15 in summer. The output is mostly consumed at Columbia and Centralia. Mr. R. E. Henry, Columbia, is manager.

THE KEEN MINE.

J. H. Keen of Columbia is owner and operator of this mine. Its location is about four miles north of Columbia. The coal vein averages three feet and ten inches in thickness, entrance to the mine being by a shaft 127 feet in depth. Ventilation is aided by a furnace. The room and pillar plan is employed and the coal undermined. Nearly all the product is sold to local dealers. The operator employs 16 men in winter and 10 during the summer months.

W. C. SUTTON.

The mine operated by Mr. Sutton is located three miles northeast of Columbia. The average thickness of the coal is three feet six inches, and is reached by a slope; ventilation by air shaft unaided by furnace fan. The pillar and room plan of operation is used, the coal being extracted by undermining. Nine men are employed at the mine summer and winter. The output is nearly all sold to Columbia dealers.

HARRISBURG POSTOFFICE.

W. H. Beasley operates a strip-pit, known as the Beasley Bank, near Harrisburg. The coal averages three feet and six inches in thickness, and power being used. Mining is done in a small way to supply the needs of the owner and neighbors.

W. A. Stidham operates a strip-pit at Harrisburg, but only a small amount of coal was extracted in 1904, and that for the use of the operator.

RUCKER POSTOFFICE.

J. H. White operates a small mine at this point, entrance to which by slope opening. The coal vein averages three feet ten inches in thickness. The product is sold to Sturgeon dealers.

BROWN'S STATION.

Isaac R. Davis operates a small mine located west of Brown's Station, Boone county. It is reached by a shaft 23 feet in depth. The shaft was sunk in 1904 and only a small amount of coal extracted, which was sold to local consumers.

CALDWELL COUNTY.

Caldwell county has a surface area of 430 square miles. It is underlaid by the coal formation, but the seams of coal occur at considerable depth and they are only about 18 inches in thickness, which facts account for the lack of greater mining development in the county. The quality of coal mined is, however, of good grade. Following is a description of Caldwell Coal Co. Mine:

CALDWELL COAL CO.

The Caldwell Coal Company own and operate a coal mine near Hamilton, Mo. The mining shaft is 527 feet in depth and the coal vein is one foot eight inches in depth. Steam power is used in operating and the mine is ventilated with a fan, ten feet in diameter. The long wall plan of mining is followed and the mining plant cost the company an expenditure of \$50,000. Seventy miners and ten other employees compose the winter working force and thirty miners and seven top men are employed during the summer months. The output of the mine was 11,866 tons of coal, valued at \$25,140.23. The improvements reported consisted of new cages, and considerable new timbering in the mine. The output of the mine is distributed to points along the H. & St. Jo. railroad.

CALLAWAY COUNTY.

Callaway county has an area of 760 square miles. The county is largely underlaid with the coal formation, in many places, however, it runs thin and somewhat irregular. In the vicinity of Fulton, mining has been carried on for many years, a good home market stimulating the trade. There are several places in the county which doubtless would make as good a showing as the Fulton district with equally as good a market to supply. Coal is found in the county at points within five to twelve miles from Jefferson City on the branch of the Chicago & Alton railroad, which terminates on the opposite side of the Missouri river from the last named city. With proper bridge toll and rates this field, from what we learn, could be worked. Proper prospect and development work should first be made to demonstrate the character of the coal, its thickness and the area covered by it.

FULTON FIRE BRICK CO.

The mine operated by this company is located near Fulton, and has shipping connection with the Chicago & Alton railroad. The average thickness of the coal vein is 30 inches, entrance to the mine being by a shaft 135 feet in depth. Steam power is used in operating, and a five-foot fan furnishes ventilation. The long-wall plan of operation is employed, the coal being extracted by undermining. Fifty men are employed in winter and thirty during the summer at this mine. The output is largely consumed in the manufacture of fire brick, the plant being owned by the company. Mr. L. V. Nichols, Fulton, is manager of the company.

JOHN HARRIS MINE.

This mine, operated by John Harris, is located about a mile southwest of Fulton, on the Jefferson City road. Thickness of coal vein, two feet and ten inches; depth of shaft, 100 feet. Steam power is used, ventilation aided by a four-foot fan. The mine is operated on the long-wall plan, the coal being undermined. Nearly all the product is consumed at the State institutions at Fulton. During the year the operator sank an air and escape shaft.

WM. CASTLE MINE.

This is a small mine located a short distance south of Fulton, and operated by Wm. Castle. The mine is entered by a drift; ventilation, natural. The coal, which averages two feet and two inches in thickness, is worked on the long-wall plan. The product is consumed in Fulton and vicinity.

J. F. REED.

This small mine, operated by J. F. Reed, is located about one mile south of Fulton. Entrance to the mine is by shaft 12 feet in depth. A furnace supplies ventilation. Horse power is used in operation. The coal is 30 inches thick and worked on the long-wall plan. The product is taken to Fulton in wagons and sold to local dealers. Mr. Reed recently sold the mine to Luther Nichols of Fulton.

THE SMITH MINE.

John W. Simmons, Fulton, is the operator of this mine, which is located south of Fulton. The coal, which is 30 inches thick, is reached

by a shaft 50 feet in depth. Hoisting is done by horse power; ventilation furnished by means of furnace. The mine is operated on the long-wall plan. Employment is given to eight men in winter and five in summer. The product is sold to the local trade.

JAMES SMITH.

The mine operated by James Smith is located a short distance south of Fulton. The mine is entered by a shaft, and a four-foot fan furnishes air. Average thickness of coal, two feet and eight inches; mine worked on the long-wall plan. The product goes to supply the local trade.

CARROLL COUNTY.

Carroll county land surface embraces 441,600 acres, and its coal producing area appears to be somewhat more extensive than has hitherto been supposed. The evidence from more recent prospecting and development indicate that the county may assume in the near future a more important place among the coal producing counties of Missouri. Following is a list of coal operators now engaged in mining and developing the county.

H. D. ANWATER MINE.

The Klondyke coal mine, owned and operated by H. D. Anwater of Hale, Mo., is a small drift mine near that town, in Carroll county. The average thickness of the vein is about 18 inches, and hand power is used in operating. The ventilation is natural and the room and pillar plan of mining is followed. Only 60 tons of coal were produced during the year, but the operator is preparing to materially increase his facilities and output of coal.

STANDARD MINE.

This is a small drift mine located on land owned by A. M. Colbert. It is being developed and operated by J. F. Lower, postoffice address, Little Compton, Mo. The vein is 18 inches in thickness and the long-wall plan has been adopted. Only two to three men are employed at this mine and the product, which was 144 tons, was mined for the accommodation of local trade.

HUGHES MINE.

Wm. Hughes of Hale, Mo., owns and operates a small strip-pit mine. The vein is 20 inches and mining is done on a small scale for the

commodation of local trade. 240 tons were produced during the year, and sold for \$600. The amount invested in this coal property is \$3,000.

STRIP-PIT MINE.

W. F. Ogle of Hale, Mo., owns and operates a coal mine in the vicinity of Hale. The operator uses horse power and his output is all consumed by local trade. The mine produced 160 tons, which brought the operator \$400.

CASS COUNTY.

This county is located at about the center of the western border of the State and has a surface area of 440,320 acres. Its mining history is confined to the operation of one coal mine, which was opened in 1896, in which year 1,000 tons were mined. The output gradually increased until 1900, when on account of refusal to comply with the requirements of State regulations, the mine was closed. Since, the mine has been reopened and the following is a description of same:

CREIGHTON COAL MINE.

This property, located near Creighton, Cass county, Missouri, is owned by the Colonial Investment Company, and is operated by Canter Andrews. The mining shaft is 163 feet in depth and the coal vein is 20 feet and ten inches in thickness. Steam power is used by the operators and the mine is ventilated with a fan. The pillar and room plan of mining is followed, and ten miners and six top men are employed in the winter season, while four miners and four top men do the work during the summer. The product was 4,173 tons of coal, which sold for \$5,347.

CEDAR COUNTY.

The area of Cedar county embraces 317,440 acres of land, but the coal area is comparatively small, the coal bearing rocks being limited to the western part of the county. Coal is found in local deposits in the hills and elevated places, and the mines are entered by drifts and slopes. The coal varies in thickness from eighteen inches to two feet. The mining operations in the county are very limited, only a small production being made for home or neighborhood use.

DUNCAN MINE.

J. C. Duncan, residing in the southwest part of the county, post-office address at Jerico Springs, has a drift mine on his land, from which he produced 80 tons of coal, the product being mined for neighborhood accomodation.

POAGUE MINE.

G. M. Poague, in the vicinity of Jerico Springs, owns and operates a drift and strip mine a few days in the winter months, disposing of product at Jerico Springs. He mined 50 tons during the year, for which he received \$75.

C. M. SCHROEDER MINE.

This coal mine, belonging to and operated by C. M. Schroeder, is in the vicinity of El Dorado Springs. The opening is drift and strip, and the coal averages about 18 inches in thickness. The mine is operated on the pillar and room plan, and the ventilation natural. The output, which was sold at El Dorado Springs, was 200 tons, and the receipts from the product, \$350.

CHARITON COUNTY.

The surface area of Chariton county embraces 473,600 acres. Coal has been found at several different places in the county, but no extensive efforts at mining and developing have been engaged in. The coal mines are now, as for many years, worked only during the fall and winter months to supply local demand. In the light of more recent knowledge concerning the occurrence of coal, it need not be surprising if the county shall assume a more important place among the coal producing counties of the State.

W. J. KAHLER MINE.

W. J. Kahler of Newcomer, owns and operates a strip-pit coal mine, located on Salt creek. The vein is 18 inches in thickness and only hand power is used in mining. During the year the production was five tons for home use.

TWIGG MINE.

This mine is on the property of Joe Tillison and is located about four miles east of Salisbury. It is operated by J. W. Twigg, postoffice

address, Salisbury, Mo. The depth of shaft is 57 feet and the vein is three feet and six inches in thickness. The plan of mining is room and pillar and the work of production is only followed in winter months. The product was 500 tons of coal, which was sold for \$1,125.

CLAY COUNTY.

Clay county has an area of 265,600 acres. While not noted for its numerous mines, it is believed to be very generally underlied with coal, although at a great depth. There is now but one important mine in the county, but the future may have in store a very considerable mining development and coal producing industry for the county.

MISSOURI CITY COAL COMPANY.

The Missouri City Coal Company owns and operates a coal mine at Missouri City. The mining shaft is 156 feet in depth and the average thickness of the vein worked is 22 inches. Steam power is used in operating, and the mine is ventilated with a fan 12 feet in diameter. The mine is operated on the long-wall plan, and 80 miners and 21 top men are employed during the winter months, while 75 miners and 18 other employes find work during the summer season. The mining plant on this property was erected by the company some years ago at an outlay of \$10,000. The product of the mine for the year was 32,510 tons of coal, valued at \$64,800. C. G. Shaw is the present superintendent of the mine.

COLE COUNTY.

Physically the size of Cole county is 390 square miles. The deposits of coal in the county occur in the form of pockets. The annual output varies from 1,000 to 8,600 tons, and the product is mostly used in Jefferson City. These coal pockets are found in various parts of the county, but the heaviest deposits are found in the vicinity of Elston, where the principal coal mining is done. In that locality some coal has been produced during the past thirty-five years. The following is a description of the Elston mine:

ELSTON MINE.

This coal mine, located at Elston, Mo., is owned and operated by Geo. Elston. The mine has a shaft entrance, the depth of which is 115 feet. The average thickness of the coal is 12 feet, and the pillar and

room plan of operating is followed. Two miners and three top men are employed, both summer and winter, and the product is mostly marketed in Jefferson City. The output of the mine was 1,600 tons, which was sold for \$4,000. The value of the mining plant is one thousand dollars, and the average wages paid to miners are \$2.50 per day.

There is a new coal mine being opened upon the Brondell place, between Elston and Centretown, by the Eastern Star Lead and Zinc Co. No report of production or mining facilities have yet been received at the office of the Mining Department.

Mr. Urban of Centretown will have two coal mines in operation during the current year, one located a short distance south of Centretown, and the other midway between the last-named place and Elston. Our next report will cover the details as to the thickness of the coal, etc.

COOPER COUNTY.

The surface area of Cooper county embraces 562 square miles, or 356,680 acres. Coal has been found in the county, but knowledge of mining operations for this product is limited to the report of one coal mining company, which is operating a mine one mile south of Boonville.

HAZELL SPRINGS COAL MINE.

The Hazell Springs Coal company operates a coal mine on the property of Chas. W. Hazell, located a short distance south of Boonville. The mine has a slope entrance and the coal is 18 inches in thickness. Hand-power is used in operating, and ventilation is natural. The mine is operated on the long-wall plan, and five miners are employed during winter months, while very little work is carried on during the summer. The value of the mining plant is reported at \$1,000, and the product of the mine was 500 tons of coal, valued at \$1,375. The output is consumed by local demand.

DADE COUNTY.

Dade county has a surface area of 500 square miles of land, equivalent to 320,000 acres. Coal occurs in local deposits in the county, and has been mined in the vicinity of Sylvania for a number of years. The work of mining is usually followed in the winter months to supply local needs. The coal occurs in the hill tops and the mines are mostly entered by drift or slopes. The mines are several miles from railroad,

and the product is taken away in wagons and consumed at different parts of the county. Following is a report of the coal mining operations in the county:

FINNEY MINE.

Finney & Taylor operate a coal mine in the vicinity of Sylvania, located on the property of B. S. McElhinney. The mine has shaft entrance, one of which is 32 feet and the other 16 feet. The coal averages 26 inches in thickness, and horse and steam power are both used in operating. There is very little work done except during winter months, when 8 miners are then employed. Work is done on the pillar and room plan, and the ventilation of the mine is natural. The product was 1,600 tons of coal, valued at \$2,800.

M'CLUCY MINE.

This has a slope entrance. The coal is 28 to 30 inches in thickness. The mine is located on land owned by R. M. McClucy, near Sylvania. Horse power is used in operating, and the ventilation natural. The mine is worked by Mr. Hadley, who sells the product at the mine for local use. He employs 4 miners during winter season, and does little in the way of mining in the summer. The production of the mine was 686 tons of coal, which sold for \$1,200.

GRUNDY COUNTY.

Grundy county embraces 460 square miles of surface area, or 4,400 acres. Coal is found in the county and is mined near Trenton, the county seat. There is but one report of coal mining operations from the county, a description of which is given below:

GRUNDY COUNTY COAL CO.

This mine is located in the vicinity of Trenton, is owned and was operated by the Grundy County Coal company until some time during 1904, when it was closed down. The mine has shaft entrance, the depth of which is 210 feet. Electric power is used in operating, and ventilated by a fan 10 feet in diameter. The long-wall plan of mining has been followed, and until operations were suspended, an average of about 80 miners were employed by the company. The improvements made during the year were new timbering of the shaft and a new electric hoist. The product during the portion of the year that the mine was operated was 13,647 tons of coal, valued at \$35,482.20.

HENRY COUNTY.

The area of Henry county in square miles is 740, or its surface area in acres, 473,600. Coal is a common product, it being found in every township of the county. The total tonnage mined in the county during 1904 was 113,987 tons, valued at \$212,234. While the county is very generally underlaid with coal, the covering in many places is so shallow that underground mining is unprofitable. There are several mines now in operation, and a brief description of each will be found in the following notes:

HUGHES MINE.

W. E. Hughes operates a mine two miles southeast of Windsor, on the property of J. C. Budy. It is a shaft entrance, the same being 23 feet in depth, and the coal averages four feet and ten inches in thickness. Horse-power is used, and a furnace supplies ventilation. An average of 8 miners are employed. The output goes to supply the local trade.

JOHN HURST COAL COMPANY.

John Hurst owns and operates two mines (Nos. 1 and 2), located about one mile east of Deepwater, on the 'Frisco railroad. The average thickness of the coal is about three feet, and reached by shaft entrance. A furnace supplies ventilation and horse-power is employed in hoisting. The pillar and room plan of working the coal is used. An average of 40 miners and 8 other men are given employment in the mines. The product, which was 19,500 tons, was shipped to points on the 'Frisco railroad between Kansas City and Springfield, Mo.

JORDAN COAL AND COKE COMPANY.

This company owns and operates mines near Deepwater, on the K. C., Ft. Scott & M. railroad. The coal averages 32 inches in thickness. Horse-power is employed for hoisting, and a fan 10 feet in diameter supplies ventilation. Shaft No. 5 was abandoned April 30, 1904, and a new shaft (No. 6) sunk in August. This shaft is located about two miles north of Deepwater, and has been equipped with good machinery. *There is no report in this office of any inspection made last year. J. H. Sheldon, with postoffice at Clinton, is general manager of the company.*

LEWIS COAL COMPANY MINE.

This mine, located near Lewis Station, is owned and operated by D. B. Pigg. Entrance to the mine is by a drift, and the average thickness of the coal is two feet and six inches. A furnace aids in ventilation, and horse-power is used in hoisting. The long-wall plan of operation is employed, the coal being undermined. Employment is given to an average of 20 miners and 25 other men at this mine. The product is shipped to Sedalia and other local towns. In 1904 an air shaft was sunk. Mr. D. B. Pigg is superintendent.

WM. REESE.

Mr. Reese owns and operates two small mines, one with a shaft entrance and the other a slope, some three miles south of Deepwater. The coal vein averages 34 inches in thickness. The depth of the shaft is 35 feet. Horse power is used and mines are ventilated by furnaces. The output is shipped to Kansas City, a portion being consumed in Deepwater.

RUSK MINE.

This mine, which is on the property of Wm. Rusk, near Deepwater, is operated by Edward Robinson. It is entered by a shaft thirty-six feet in depth, the average thickness of the coal being 34 inches. The output is limited and goes to supply local demand. The operator sunk an air shaft to the mine last year.

COON CREEK COAL COMPANY.

This company owns and operates a strip-pit near Clinton, a steam shovel as well as teams being employed in stripping. The coal has an average of 34 inches in thickness. In 1904 over 11,000 tons of coal was produced, which was sold to dealers at Clinton and other local points. The company has invested \$50,000 in coal property and plant, and constructed a new incline conveyor costing \$7,000. Fred. W. Olson, with postoffice address at Clinton, is assistant manager.

COOPER CREEK COAL COMPANY.

The mine operated by this company is located between Browington and Deepwater, on the property of the Jno. I. Blair heirs. The coal vein *about three feet thick* and is reached by a shaft entrance thirty feet

in depth. Steam power is employed in mining, and ventilation is furnished by a fan 12 feet in diameter. The pillar and room plan of working the coal is used. It is a practically new mine and the equipment is good. The mine has shipping connections with the 'Frisco railroad by means of a spur switch and a tramway, 600 feet in length, connecting the mine with the railroad. The product is shipped to Missouri points along the 'Frisco railroad. Mr. Geo. A. Blanchard of Brownington is superintendent.

ANACONDA MINE.

H. T. Demaree is the owner and operator of this mine, which is located a mile and a half east of Deepwater. Entrance to the mine is by a shaft 30 feet deep, and the coal averages about three and a half feet in thickness. Hoisting is done by horse-power, and ventilation is supplied by a furnace. An average of 15 miners and 4 other men are employed winter and summer. The coal is hauled away in wagons and sold to dealers at Deepwater and other near-by towns.

DICKEY'S MINE NO. 4.

The W. S. Dickey Clay Mfg. Co. is the owner and operator of this mine, which is located southeast of Deepwater. The coal averages 34 inches in thickness and is reached by a shaft 34 feet deep. Steam power is used for hoisting, and a 10-foot fan supplies ventilation. The mine is operated on the pillar and room plan, the coal being blasted off the solid. The coal, which is hauled away in wagons, is all consumed by the company in the manufacture of tiling. An average of 35 miners and other men are employed at the mine. During the year the company sunk an escape shaft. A. E. Dickey, postoffice Deepwater, is superintendent.

ENGEMAN'S COAL BANK.

Wm. Zimmerman operates this strip-pit, located on the property of Chas. Engeman, near Montrose. The coal is about 24 inches in thickness. The product is small, the mine being operated for local trade only.

PAYTON & KENNEDY.

This company operates a shaft on the property of Henry E. Hamilton, a mile and a half south of Deepwater. The coal runs from 36 to 40 inches in thickness and is reached by a shaft 32 feet in depth. Horse-power is used in hoisting, and a furnace supplies ventilation. The pillar and room plan of operation is employed. The product is

mostly consumed in Deepwater and local points. During the year the company built a tram road costing \$500. J. H. Kennedy, with post-office at Deepwater, is superintendent.

JACKSON COUNTY.

This county has a surface area of 403,200 acres. Coal is found at a considerable depth and is mined at one place in the immediate vicinity of Kansas City.

BRUSH CREEK MINE.

The Brush Creek Coal Mining company own and operate a coal mine two and one-half miles southeast of the corporate limits of Kansas City. The postoffice address of the company is 109, Gibraltar Building, Kansas City, Mo. The company has invested \$100,000 in its mining plant, and the machinery is all reported to be first-class. The mine is reached by shaft entrance, the depth of which is 300 feet. The average thickness of the coal deposit is 20 inches. Ventilation is produced by a fan 10 feet in diameter, and mining is done on the long-wall plan. For reasons not known, the mine was closed down on the 15th of April, 1904, but up to that date sixty miners were employed, and there had been produced from the mine 3,348 tons of coal, valued at \$8,375.

JOHNSON COUNTY.

This county embraces a surface area of 412,000 acres, the most of which is underlaid by the coal formation of varied thickness and depth. The mines have heretofore been of very limited capacity, and the product necessarily small. The current year (1905) will show a very decided improvement, however, not only in the increased number of mines opened up, but in their capacity and product. The opening of the Colorado, as it is called, but more properly the Kansas City branch of the Rock Island system, has greatly stimulated the trade, followed by an immense amount of prospect and development work. The prospect work carried on by Gen'l Hudson and Mr. John Tillman, alone, is sufficient to induce the sinking of many shafts. That a body of coal was known to exist in the neighborhood of Chilhowee has long been an open question, but the conception of the coal area in that section was wide of the truth. An immense field of coal has been demonstrated by the drill and at such depth and of such thickness as to prove a revelation to many. The report for the current year will cover the inspection of *many new mines, and a detailed statement of all the new mines opened and in process of development.*

CAZZELL MINE.

J. C. Cazzell owns and operates a mine near Montserrat. The work of mining is only followed during a brief period in the winter. The entrance to the mine is by drift opening. Hand-power is used in operating, and ventilation natural. The coal is 20 inches in thickness and is worked on the pillar and room plan. The product of this mine was 45 tons.

CHRISTOPHER COAL MINE.

This is a strip-pit mine. The coal is 16 inches in thickness, and the mine is located near Warrensburg. It is owned by J. H. Christopher, who mines coal for his own use. His output was 110 tons.

BULLOCK MINE.

This mine is on the property of Isaac Markurd, and is operated by D. A. Bullock. It is located near Warrensburg, and is worked more or less the year round. The mine has drift entrance, and the coal is 20 inches in thickness. It is operated on the pillar and room plan, and the ventilation is natural. An average of 6 miners are employed during both the winter and summer seasons, and 8 kegs of powder used during the year in mining the coal. The output, which was 3,142 tons, valued at \$4,713, was consumed in the vicinity of the mine.

MEILY MINE.

M. B. Meily operates a coal mine near Warrensburg, located on land belonging to H. Rosenthal. The mine has shaft entrance, the depth of which is 24 feet, and the coal deposit is 22 inches in thickness. The ventilation is natural and gasoline engine affords power in operating. Mining is done on the pillar and room plan, the coal being undermined. Six miners are employed during winter and two during summer, while two other employes are constantly engaged. The local market consumes the output, which was 842 tons, valued at \$2,105. New main shaft, air shaft, gasoline engine and hoist and rotary pump are the improvements reported.

HOWARD COUNTY.

In square miles Howard county measures 450. Coal has been mined *in the county* for many years. There are two veins occurring in the county, the upper, thinner vein, is now being worked. The seam of coal, which extends under a large portion of the county, is the same as

that so extensively mined in Randolph county. The total product mined during the year was 2,694 tons.

HAMILTON & GRANT COAL MINE.

The Hamilton & Grant Coal company own and operate slope and strip-pit mines at Russell. The postoffice address of the company is Weir City, Kas., and the superintendent of the mines is W. H. Fulton. The ventilation is natural, and steam power is used in operating. Six hundred dollars are invested in the mining plant, and 8 miners are employed. The product was 2,000 tons of coal, valued at \$5,000.

MORRISON COAL MINE.

R. S. Jackson of Fayette operates a drift coal mine located on land near Fayette, owned by the heirs of Alfred Morrison, deceased. The mine is operated by hand power and the coal is 18 inches in thickness. The ventilation is natural and the mine is worked on the long-wall plan, the coal being undermined. From three to six miners are employed, and the product is sold in Fayette. The output was 694 tons, valued at \$1,873.80.

LAFAYETTE COUNTY.

Lafayette county has a surface area of 622 square miles. Coal has been mined in the county for over sixty years and for many years it has ranked high among the best coal producing counties of the State. The coal seam worked within her borders is small as compared with seams in other parts of the State, but the nature of the roof and short haul to market are advantages which stimulate active coal production. There has been a marked increase in the annual output of the mines during the past few years, and the time may not be distant when Lafayette county may head the list of Missouri counties in the production of coal should the increase in production keep up a few years. Following is a description of each mine, with statement as to their locations and conditions:

BELL & GREER.

This company operates a mine near Lexington. The coal vein is 18 inches thick, entrance to the mine being by a drift. Horse-power is used in operating, and a furnace supplies ventilation. The long-wall plan of operation is employed and the coal undermined. The output is sold to *Lexington* dealers. During the year the company has erected *sheds over platforms* and over track from mouth of entrance, and over-

hailed all roads and put them in good condition. W. H. Greer, Lexington, is superintendent.

BONANZA COAL COMPANY.

S. W. and J. B. Brandan operate this mine, which is located near Higginsville. It is entered by a shaft 71 feet in depth. A fan, eight feet in diameter, furnishes ventilation, horse power being used for hoisting. The coal, which has a thickness of 18 inches, is worked on the long-wall plan. The product is nearly all shipped to Kansas City. S. W. Brandan, whose postoffice address is Higginsville, is manager.

BARTELS' MINE.

This is a small mine, operated by Martin Bartels, and located near Concordia. Entrance is by a drift; average thickness of coal, 24 inches. Horse power is used; ventilation, natural current. The long-wall plan of operation is employed. Output is sold at Concordia.

B. F. CARY MINE.

This mine, operated by B. F. Cary, whose postoffice address is Kansas City, is located at Mayview. The coal averages 17 inches in thickness, entrance to which is by a shaft 130 feet in depth. Steam power is employed; ventilation supplied by means of furnace and a six-foot fan. The long-wall plan of operation is used. The product of this mine is shipped to Kansas City and points on the Chicago & Alton railroad.

CHAMBERLIN MINE.

N. F. Wilson, operator. This is a small mine and run in a somewhat primitive way, but the quality of the coal is excellent, the demand therefor far exceeding the supply. The mine is located at Greenton Valley, entrance to the mine being by a drift. The coal vein is but 15 inches thick and is worked on the long-wall plan. A furnace supplies ventilation. Output is sold to the local trade. A new drift and shed were constructed during the year. J. A. R. Chamberlin, Odessa, is superintendent.

CONSOLIDATED FARMERS COAL COMPANY.

Mine No. 1, located near Higginsville, is entered by a shaft 80 feet in depth. The coal, which averages 18 inches thick, is worked on the long-wall plan and undermined. Steam power is employed in the operation of the mine, ventilation being furnished by a fan 10 feet in diameter. This mine gives employment to 40 men in winter and 30

1 summer. The output is shipped to Kansas City and to Kansas and Nebraska points.

Mine No. 6 is located at Higginsville. Entrance to mine is by a shaft 20 feet in depth; average thickness of coal, 18 inches. Steam and horse-power used in the operation of mine; a 10-foot fan furnishes ventilation. The long-wall plan of operation is employed. In this mine 15 men are employed in winter and 30 men in summer. The product is shipped to points in Kansas and Nebraska.

Mine No. 7. This is a drift opening. Long-wall plan of operation; ventilation by means of furnace. There was but little work done in this mine in 1904.

The above company is capitalized for \$80,000. Mr. M. L. Belt, whose postoffice address is Higginsville, is president.

DIAMOND COAL COMPANY.

This company operates three mines in Lafayette county, named respectively "Diamond," "Salt Fork" and "Wilson," all of which are located at Corder. Entrance to each is by shaft and the coal vein averages two feet in thickness. Horse power is used and ventilation is supplied by fans. The long-wall method of mining is employed in each mine. Employment is given to an average of 98 men winter and summer. The product is shipped to Kansas City and points on the C. & N. railroad. During the year the company sunk a new air course in the diamond mine, built about 1,000 feet of roads and made other improvements. Mr. C. L. Wilson, postoffice address, Corder, is superintendent.

DOVER MINE.

This mine is located near Dover and operated by the Dover Coal company. It is a drift opening. The coal averages two feet in thickness and is worked on the long-wall plan. Horse power is used and ventilation is aided by a furnace. The company employs 40 men in winter and 20 in the summer. The product is shipped to local railroad points. Mr. Tilton Davis of Lexington is president of the company.

SPRING LAKE COAL MINING COMPANY.

J. A. Edmonds & Co., owners and operators. This mine is located about ten miles west of Lexington. Entrance to the mine is by shaft forty feet in depth. The coal, which ranges in thickness from sixteen to thirty inches, is worked on the long-wall plan. A four-foot fan furnishes ventilation; the kind of power used is steam. The product is shipped to Kansas City and other Missouri points. During the

year the company installed new machinery and made other improvements, such as new twin hoisting engine, engine house, boiler, fan, and erected a number of dwellings for miners. J. A. Edmonds, Sr., postoffice address, Lexington, is secretary.

FARMERS' COAL COMPANY.

This company operates two mines (Nos. 2 and 3), near Higginsville, with shaft entrances. The average thickness of the coal vein is 18 inches. At No. 2 horse power is used, and steam at No. 3. Fans 8 feet in diameter furnish ventilation to the mines. The long-wall plan of operation is employed. Most of the mining is done with electrical machines. The company employs 75 loaders in winter and 10 in summer; other men, 72 in winter and 5 in summer. The output is shipped to Kansas City and western points. New mining machines and equipment generally were installed during the year.

INDEPENDENCE COAL COMPANY.

This mine is located near Napoleon, Lafayette county, on the property owned by Stephen Gates. The coal averages 18 inches in thickness, entrance to the mine being by a shaft 47 feet in depth. Steam power is used for hoisting, and electric for cutting or undermining. The long-wall plan of operation is employed. Mine is ventilated by means of a five-foot fan. Employment is given to 25 miners and 10 other men in winter; the mine has not been running in the summer months. The product is sold at Independence and Kansas City. Electric coal mining machines and an engine and boiler were installed during the year.

HOFFMAN MINE.

E. J. Hoffman is owner of the property and operator of this mine, which is located near Higginsville. It is entered by a shaft 32 feet in depth. The average thickness of the coal is 18 inches, and the mine is worked on the long wall plan. Horse power is used in hoisting; ventilation, natural. The output is sold to local and Kansas City dealers.

BLACK DIAMOND MINE.

Hohenwald Bros. operate this mine, located on their own land, about a mile northwest of Corder. It is entered by a shaft, 30 feet deep, and ventilated by a furnace. The coal averages 22 inches in thickness and horse power is used for hoisting, the long-wall plan of operating the mine being employed. The product is sold to local dealers.

KIERSTEAD COAL COMPANY.

This company, in November, 1904, acquired and took possession of the property and plants formerly owned by Smith & Asbury, sometimes called the Corder Coal Company. There are two mines, both located between Higginsville and Corder, on the main line of the C. & A. Ry. The property consists of 750 acres of coal, 90 acres of surface, two hoisting shafts, two air shafts, one of each of which is equipped with steam power. Mine known as the "Mysterious Stranger" is entered by a shaft 90 feet in depth and an eight-foot fan supplies ventilation. The company started in on December 1, 1904, to revamp the entire property, and were still at work improving the property at the close of the year. The "Corder Shaft" is worked on the long-wall plan, a six-foot fan furnishing ventilation. In this mine 20 miners are employed in winter and 18 in summer. The output of the mine is shipped to points on the C. & A. Ry. Geo. W. Kierstead, Higginsville, is president of the company.

LABOR EXCHANGE, BRANCH 305.

Harry Kendrick, manager. This mine is located one mile west of Wellington. It is entered by a shaft 105 feet in depth and a furnace supplies ventilation. The coal is 18 inches thick and is worked on the long-wall plan. The product is sold in Kansas City and vicinity. Mine is owned by a co-operative company. Employment is given to 68 miners in winter and 60 in summer, besides 4 other men winter and summer. A new shaft was sunk in 1904 and drive entry started.

LANNING-HARRIS COAL & GRAIN COMPANY.

This company operates the mine known as the "Daisy," which is located near Wellington; they also own the property on which mine is situated. It is a drift opening and a furnace supplies ventilation. Electric power is used, and the mine is operated on the long-wall plan. Eighty miners are employed in winter and 25 in summer, besides 12 other men in winter and 5 in summer. The product is shipped to Missouri, Kansas and Nebraska points. During the year the company installed a complete electric plant, costing about \$25,000; also constructed 100 pit cars, 10 houses for miners, extended railroad switch and made several other improvements. The general office of the company is in Kansas City. Mr. H. Harris is manager.

LEXINGTON BLOCK COAL COMPANY.

The mine operated by this company is located at Lexington. Entrance to mine is by shaft 110 feet in depth, and a fan 10 feet in diameter furnishes ventilation. The coal vein is 20 inches thick and is worked on the long-wall plan. Steam power is used. Employment is given to 60 miners in winter and 30 during the summer months. The product is shipped to points in Missouri, Kansas and Nebraska. The general office of the company is at Kansas City, 202 New England Building. Mr. H. W. Seval is secretary.

LOONEY'S MINE.

Frank George, Higginsville, successor to Ballew & Gladish, is operator of this mine, which is located one mile west of the town of Higginsville. J. H. Looney is owner of the property. Mine is entered by a shaft, 75 feet in depth, the average thickness of the coal being 18 inches. Steam power is used in hoisting and a fan supplies ventilation. The product is shipped to Kansas City, Mo.

MACEY COAL MINE.

This mine is on the estate of Henry Macey, near Myrick, and is operated by E. Macey VanGuilder, whose postoffice address is Massachusetts Building, Kansas City, Mo. The coal, which averages 22 inches in thickness, is reached by a drift opening. Horse and hand power used in operation; a furnace supplies ventilation. The output is sold to wholesale dealers for shipment to Missouri, Kansas and Nebraska points.

J. C. M'GREW.

Mr. McGrew of Lexington owns and operates two mines located three miles west of Myrick, which have shipping connections with the Missouri Pacific railroad by switches. The average thickness of the coal is 22 inches, entrance to both mines being by drifts. Electric power is used and a furnace supplies ventilation. The long-wall plan of working the mines is employed. Both mines give employment to 230 miners in winter and 50 in summer, also 20 other men in winter and 10 in summer. The product of the mines amounted to 66,211 tons, and was shipped to points in Missouri, Kansas and Nebraska. These mines are *kept in first-class condition* and are very productive.

SILVER CREEK COAL COMPANY.

The Silver Creek mine is operated by Opie & Mitchell. It is located near Waverly. The coal averages 3 feet and 8 inches in thickness and is reached by a shaft 125 feet in depth. The pillar and room plan of operation is used. Steam power is employed and a 4-foot fan furnishes ventilation. There was little work done at this mine during the year, owing to some disagreement between operators and men.

SIFE & GAFFIN.

These parties operate a small mine near Lexington, on the property of John Plattenburg & Son. Entrance to the mine is by a shaft 28 feet in depth, a furnace supplying ventilation. The coal, which is 18 inches thick, is worked on the long-wall plan and undermined. Horse power is used in operating the mine. The product is consumed in Lexington.

STRAMCKE & ATWOOD.

The mine operated by these gentlemen is located near Lexington on the property of Plattenburg & Son, and is called the "Cripple Creek" mine. The coal averages 18 inches and is reached by a drift. A furnace supplies ventilation, the long-wall plan of operation being employed. The output is sold to Lexington dealers.

ROSEWELL BROS. MINE.

This mine, located near Lexington, is owned and operated by Jas. Rosewell. Entrance is by a shaft 75 feet in depth and the coal averages 20 inches in thickness. Horse power is used in operating, and a furnace supplies ventilation. The mine is worked on the long-wall plan. Product is sold in Lexington.

WILL NOAH.

The mine operated by Mr. Noah is located near Higginsville on property owned by S. A. Schooling. It is a drift entrance, the average thickness of coal being 20 inches. A furnace supplies ventilation to the mine, which is worked on the pillar and room plan. Eight miners are employed in winter and two in summer. The output is sold to the local trade.

WAVERLY COAL MINING COMPANY.

This company owns and controls the mineral rights to several hundred acres of land lying east, south, west and directly under the town of Waverly. We understand that a large part of the property has been tested by the drill and proved an extensive body of coal of an average thickness of four feet. The mine operated by this company has its shaft opening near the Missouri river bank, and adjacent to the River Route of the Missouri Pacific railway, which affords excellent transportation facilities. Since the present management assumed control the shaft has been enlarged and the tip house overhauled and strengthened so as to make it a practically new structure. The cages are new and of extra strength, and the catches on the same, which are of a tried and approved pattern, are in good order. The pit cars are of a new design and well adapted to the work, the engine and boiler houses large and roomy, while the equipment, consisting of engines, boilers, air compressor, pumps, etc., is of ample capacity. A new and well-constructed stable is stocked with a fine lot of mules. The coal, the thickness of which has been mentioned, is reached by a shaft 110 feet in depth, and it is easily mined and of good quality, a large portion of the output going to supply the State penitentiary and several other State institutions, in accordance with contracts of several years' duration. The roof over the coal is of extra strength and well guarded.

Having no record of inspections made of the mine during 1904, we have our information relative to conditions existing during the early part of the current year through the present chief coal mine inspector. He reported the underground conditions as very good, except as to the roof, which was not then sufficiently propped, owing to abundant faith in its natural strength, and further reported a lack of air at several places in the mine, which has since been remedied by substituting wooden doors for curtains. The fan is 15 feet in diameter, of ample power to produce all the air needed when the same is properly conducted. The mine is worked on the room and pillar plan and the coal blasted off the solid. During the year 2,460 kegs of powder were consumed, at an average cost to the miner of \$2 per keg. An average of 75 miners worked 242 days during the year. The output of the mine was 61,607 tons, which sold at an average of \$1.61 per ton at the mine, and aggregated \$99,348.27. Mr. James R. Tustin is the general manager, with office at Waverly, Mo.

WESTERN COAL AND MINING COMPANY.

This company owns and operates five of the largest mines in Lafayette county, all within a distance of three miles from Lexington and having connections with the Missouri Pacific railway. All five mines are worked on the long-wall plan and the coal vein ranges in thickness from twenty-one to twenty-four inches. The mines are all well equipped and carefully and intelligently operated. The main offices of the company are located in the Laclede Building, St. Louis, Mr. B. F. Bush, with local office at Lexington, being general manager.

The Valley mine, operated by this company, is located some three miles south of Lexington, and is one of the largest, the output in 1904 being over 101,000 tons. The coal vein is twenty-two inches in thickness, access thereto being by a shaft 87 feet in depth. Steam and electric power are employed in the operation of the mine, and a fan of ample dimensions supplies air. An average of 104 miners and 60 other men are employed in this mine winter and summer, the product being shipped to Missouri, Kansas and Nebraska points.

The Midway and Summit mines are in the neighborhood of the Valley mine and all three work the same coal vein, and the equipment and method of operation are of the same character and plan.

The Glen Oak mine, located about three miles east of Lexington, has shipping connections with the Missouri Pacific railway by means of a switch 4,000 feet long. The thickness of the coal averages two feet, entrance to the mine being by a shaft 43 feet in depth. Air is supplied by two fans, located at different portions of the mine, so as to furnish ventilation to every part. The mine is worked with first-class machinery and gives employment to an average of 130 miners and 25 other men summer and winter.

The Seawell mine is located at Myrick Junction, with shipping connections with the Missouri Pacific railway. It is entered by a drift and ventilated by a furnace. The mine is an old one and very extensively and persistently worked. Mule power is used and the long-wall plan of working is employed. An average of 58 miners and 9 other men are employed in the mine.

GAFFIN MINE.

This mine, owned by Otho M. Gaffin, was recently leased by him to Ed. Aull of Lexington. It is located two miles east of Lexington, and has shipping connections with the Missouri Pacific railway by

means of a spur track extending from the mine to the main track. The mine is entered by a drift and ventilated by a furnace. The coal, which averages about 18 inches in thickness, is worked on the long-wall plan. It was operated only 50 days by Mr. Gaffin in 1904, the output being 2,300 tons. There is no record in this office of any inspection since the mine came under the new management.

CONCORDIA POSTOFFICE.

A. F. Kresse operates a small mine near Concordia. It is entered by a slope, the coal averaging 20 inches in thickness. It was worked but little during the year for lack of men, only 250 tons of coal being taken out.

H. F. Frirking operates a mine in a limited way at that point. Slope entrance; ventilation by furnace; long-wall plan of operation. Output consumed at Concordia.

CORDER POSTOFFICE.

S. F. Gersendorfer operates a drift near Corder. Average thickness of coal, 20 inches; hand power; natural ventilation; long-wall system of working coal. Product consumed in the vicinity.

ODESSA POSTOFFICE.

Thos. Perry operates a drift near Odessa; coal averaging 16 inches; long-wall plan of operation. The limited output is sold to local consumers.

ALMA POSTOFFICE.

M. W. Summers operates a small mine at this point to supply local consumers. Entrance is by a drift; steam power used in operation. Output during the year was 3,600 tons.

HIGGINSVILLE POSTOFFICE.

Kratz & Son operate a small mine located two miles southeast of Higginsville. The coal, 18 inches in thickness, is reached by a shaft 16 feet in depth. A furnace supplies ventilation. Product sold to local consumers.

LEXINGTON POSTOFFICE.

Thomas Walton owns a mine located on the south bank of the Missouri river, near Lexington. It has been a good producer, but be-

came flooded in 1903, and was for a time abandoned. The product is consumed locally. Recently Mr. Walton leased the mine to other parties.

BLACKBURN POSTOFFICE.

F. Stoecker operates a mine near Blackburn. Thickness of coal 22 inches, access thereto being by a shaft 30 feet deep. Horse power; natural ventilation. The output is consumed in the neighborhood.

LINN COUNTY.

Linn county embraces in its surface area 520 square miles, or 332,800 acres of land. Coal occurs in various parts of the county and is mined in the vicinity of Brookfield and Marceline. Mining to some extent has been carried on for several years, and the product of the county for 1904 was 102,205 tons of coal, valued at \$229,156. Following is a report of locations and condition and mining operations in the county:

BROOKFIELD PAVING BRICK COMPANY.

This company operates a mine located half a mile east of Brookfield, which has shipping connections with the Hannibal & St. Joseph railroad. The coal averages two feet and four inches in thickness, reached by a shaft 155 feet deep, and is worked on the pillar and room plan. Steam power is used for hoisting and a furnace supplies ventilation to the mine. Nearly all the coal produced is consumed by the company in the manufacture of paving brick from shale taken out of the mine. During the year the company made various improvements in the equipment, including repairs to cages, engine, buildings and track. C. H. Farris of Brookfield is the company's secretary.

BURDALL MINE.

This mine is operated by Burdall & Johnson and is located one mile east of Brookfield. Entrance is by shaft 140 feet deep, and the coal, which is mined on the long-wall plan, is 26 inches in average thickness. Horse power; mine ventilated by means of furnace. An air shaft, commenced two years ago, has recently been finished. The product is sold to the local trade.

LANDRITH MINE.

The Landrith Coal Co., of Marceline, operate this mine, which is located near that town. The shaft is 130 feet deep and coal thickness

about 28 inches. Steam power is employed and ventilation is furnished by a 12-foot fan recently installed. An average of eleven miners and other men are employed at the mine. Besides putting in a new fan, the operators have brushed up all the entries six feet high, and made other improvements. The output is sold to dealers in Marceline.

MARCELINE COAL COMPANY.

This company owns and operates a mine near Marceline; shipping connection with the A. T. & S. F. railroad by means of a spur track about 5,000 feet long, extending from the mine to the main track. The mine is well equipped with machinery. The shaft is 185 feet deep and the coal vein averages 28 inches in thickness. A fan 12 feet in diameter supplies ventilation. The long-wall system of operation is used, the coal being undermined. Employment is given to an average of 127 miners and 35 other men winter and summer. Most of the product is sold to the Santa Fe, a portion being shipped to Kansas City, Mo. There is no record in this office of any inspection of the mine last year. Jas. Hemmings, with postoffice address at Marceline, is superintendent.

SCHAEFER MINE.

This mine, located two miles east of Brookfield, is owned and operated by Herbert J. Rowell. Shaft 150 feet deep; thickness of coal 26 inches. Steam power is used and a furnace supplies ventilation. The long-wall plan of working the coal is employed. The output is consumed at Brookfield.

L. R. WILLIAMSON.

This mine is located a short distance north of the Schaefer mine, near Brookfield, and on the same coal seam. Entrance to the mine is by a shaft 155 feet deep. Long-wall plan of working coal; hoisting by horse power; natural ventilation. The output, which was very small, was consumed in the neighborhood.

BLACK PLUME.

The above-named mine, located one and a half miles east of Brookfield, is owned and operated by H. C. Wine. Shaft, 150 feet deep; thickness of coal about 28 inches; horse power; natural ventilation. It is a *small mine*; the product is consumed in Brookfield and vicinity.

LIVINGSTON COUNTY.

Livingston county has a surface area of 520 square miles, or 332,800 acres. Coal is found in the county at several places, and is mined some five miles north of Chillicothe, where also the product is mostly consumed. Only two reports from operators were received at this office, but there are doubtless other small mining operations in the county, with product so small that they have been deemed unworthy of report by the land owners and operators. The following notes of the two mines mentioned will give a fair estimate of coal mining operations in the county:

COX'S STAR MINE.

W. L. Cox & Bro. operate a coal mine located five miles north of Chillicothe, on land owned by J. C. Cox. The shaft is 84 feet deep and hoisting is done by horse power. The ventilation is natural and the coal is 18 inches in thickness. The product is consumed in Chillicothe, and the output for the year was 1,339 tons, valued at \$3,012.75.

MOORESVILLE COAL MINE.

J. E. Dusenberry operates a coal mine during the winter season, located one and one-half miles north of Mooresville, on land owned by C. W. Garlic. The shaft is 47 feet in depth, and the coal is 16 inches thick. Horse power is used in operating, and the product was 200 tons, valued at \$500.

MACON COUNTY.

The surface area of Macon county is 820 square miles. Coal occurs in almost every part of the county, and coal mining is one of its chief business industries. The county continues first in rank among the coal-producing counties of the State. Nineteen coal mines were operated in 1904, employing 1,248 miners during the winter and 1,221 during the summer. The total output of the mines for the year was 899,963 tons of coal, valued at \$1,379,986. The larger mines are located at Ardmore, Bevier, Keoto and Lingo, but there are a number of small mines in various parts of the county operated only during the winter to supply home consumption and local demand. Following is description of locations and condition of the coal mines of the county.

BEVIER COAL MINING COMPANY.

Mine No. 15.—This mine, located near Bevier, is owned and operated by the Bevier Coal and Mining Co., W. E. Murlin, general manager. Entrance is by a slope, and the coal, which is worked on the pillar and room plan, and blasted off the solid, is of an average thickness of 4 feet and 6 inches. Electric power is used, and a fan 12 feet in diameter furnishes ventilation to the mine. Employment is given to 60 miners and 35 other men winter and summer, and the output is shipped principally to St. Joseph and Omaha, a portion being sold to dealers in Bevier. In way of improvements, the company recently constructed a fan house and an electric motor for running the fan. A strike occurred at the mine, through a misunderstanding on the part of the men, November 18, 1904, but it was settled in a few days by the officers of the U. M. W. A. of A., the men returning to work November 22, 1904. No report of any inspection in this office by the late Mine Inspector in 1904.

CENTRAL COAL AND COKE COMPANY.

This company owns and operates eight large producing mines in Macon county, beside several mines in other counties, and is a greater factor in the development of the coal mining industry of this State than any other person or company engaged in the business. D. Mackie is general manager and F. E. Doubleday superintendent of the company, with offices both at Bevier and Kansas City, Mo. There being no record in this office of inspections of these mines conducted by the late Mine Inspector in 1904, we have to depend on reports received from the company's superintendent and foremen as to description and condition of the mines:

Mine No. 10.—This mine is located one mile southeast of Bevier, and has a shipping connection with the Hannibal & St. Joseph railroad by means of a switch 5,000 feet long, extending from the mine to the main track. The shaft is 137 feet in depth and equipped with good machinery. Average thickness of coal, 3 feet and 10 inches. A 12-foot fan furnishes ventilation, and steam power is used in hoisting. The pillar and room plan of working the coal is employed. An average of 100 miners and 38 other men are employed winter and summer, and the product is shipped to points in Missouri, Kansas, Nebraska and Illinois *points*. Several new box-car loaders were constructed last year, *beside an underground extension to the mine*. John S. Davis is *foreman; postoffice at Bevier*.

Mine No. 12.—Mine is located one mile south of Bevier on the Hannibal & St. Joseph railroad. Entrance is by a shaft 83 feet deep; hoisting by steam power; ventilation supplied by a fan 10 feet in diameter. The coal, averaging 4 feet in thickness, is worked on the pillar and room plan and blasted off the solid. This mine gives employment to 73 miners and 37 other men. The product is shipped to points in Missouri, Kansas, Nebraska, Iowa and Illinois, over the Burlington and Wabash systems. John S. Davis, foreman, Bevier.

Mine No. 24.—This mine was opened and equipped with first-class machinery in 1903. It is located three miles west of Ardmore, and has shipping connections with a switch which runs from Excello to Bevier. Depth of shaft, 119 feet; average thickness of coal vein, 4 feet and 4 inches; ventilation by 14-foot fan; hoisting by steam power. Mine operated on pillar and room plan and gives employment to 147 miners and 52 other men. By way of improvements, several new Ottumwa box-car loaders and new 100-ton scale added in 1904, and underground workings extended. John S. Davis, foreman.

Mine No. 25.—Opened and equipped during 1904. Mine is located near Keota and has shipping connections with the Wabash and Hannibal & St. Joseph railroads. Entrance to the mine is by a slope, and the coal averages 4 feet and 3 inches in thickness. Ventilation by a 12-foot fan, and hoisting by steam power. The mine was in operation but 45 days in 1904, giving employment to 13 miners and 9 others. John S. Davis is foreman.

Mine No. 52.—This mine is located a mile west of Excello and has shipping connection with the Wabash railroad by means of a switch. The mine is entered by a slope and ventilated by a furnace. The coal, which averages 3 feet and 8 inches in thickness, is worked on the pillar and room plan; hoisting by steam power. Employment is given to 23 miners and 11 other men.

Mine No. 61.—Located two miles south of Bevier, near Keota. Shaft 124 feet; thickness of coal vein, 4 feet and 3 inches; hoisting by steam power; ventilation furnished by a 15-foot fan. Mine worked on the pillar and room plan, and employment given to 235 miners and 87 others winter and summer. A new 100-ton scale was installed during the year.

Mine No. 66.—Mine is located half way between Bevier and Ardmore, and has shipping connections with the Hannibal & St. Joseph and Wabash railroads. The shaft is 57 feet deep and well equipped with modern machinery; average thickness of coal, 4 feet and 3 inches. 12-foot fan furnishes ventilation. Employment given to 180 miners

and 64 others winter and summer. Improvements: New fan engine, new 100-ton scale, extension of underground workings.

Mine No. 70.—Location about three miles west of Excello. Shipping connection with the Wabash railroad. There are three drift openings to mine No. 70, all within a radius of a quarter of a mile. The west drift is ventilated by means of a 10-foot fan, and the east and south drifts by furnaces. Mules are used to pull coal to tipple. The pillar and room plan of operation is employed in working coal, which is 4 feet and 4 inches in average thickness. In this mine 37 miners and 19 other men are employed.

SUNSET MINE NO. 1.

This mine is owned and operated by J. H. Dennis. It is located one mile west of Macon. Entrance to the mine is by a shaft 60 feet deep, and the coal, which is 2 feet in average thickness, is worked on the long-wall plan. Ventilation is aided by a furnace. Employment is given to 12 miners in winter and 5 in summer. The product is sold in the neighborhood.

GARNETT MINE.

Frank Garnett is the owner and operator of this mine, which is located near Macon. The shaft is 35 feet in depth and the average thickness of the coal vein 24 inches. Hoisting is done by horse power and the coal worked on the long-wall plan. The mine employs 6 miners in winter and 4 in summer. Several improvements were made in 1904. The output is sold to the local trade.

LINGO MINE.

The Helmet Mining Co. owns and operates this mine. It is located near Lingo and has connection with the Hannibal & St. Joseph railroad. The coal is 3 feet and 6 inches in average thickness, entrance to the mine being by a shaft 130 feet in depth. Steam power is used in operating and a fan, 12 feet in diameter, furnishes ventilation. The mine gives employment to 75 miners and 25 other men winter and summer. Nearly all the product is shipped to Kansas City. D. Fennell, whose postoffice is Lingo, is manager.

HOLTZCLAW & HURD.

The above company owns and operates a mine three miles southwest of Macon. It is entered by a shaft 90 feet in depth and the coal

averages 3 feet in thickness. Horse power is used for hoisting and ventilation is supplied by a furnace. The coal is worked on the long-wall plan and blasted off the solid. Employment is given to 18 miners and 3 other men winter and summer. During the year the company built a new office and installed wagon and top scales, placed steel rails on entries, sunk an air shaft and purchased a new wire cable. The prospects are excellent in this mine for a large output, and there is a steady market for all coal mined. The output is sold to dealers in Macon and other local towns. R. N. Holtzclaw is superintendent, with postoffice at Macon.

JAMES MINE.

James Bros. operate this mine, which is located near Bevier, on the property of Mrs. Levi James. The mine is entered by a shaft 54 feet deep. Horse power is used for hoisting and a furnace supplies ventilation. The coal, which averages 4 feet and 4 inches in thickness, is worked on the pillar and room plan and blasted off the solid. The output is consumed in the neighboring towns.

NORTHWESTERN COAL AND MINING COMPANY.

Mine No. 8. This large mine is located about one mile south of Bevier, and has shipping connections with the Hannibal & St. Joseph Railroad. The shaft, which is 140 feet in depth, is well equipped with machinery. Steam power is used in operating, and a 14-foot fan furnishes ventilation. The coal, which is 4 feet 6 inches in thickness, is worked on the pillar and room plan. The mine gives employment to an average of 246 miners and 80 other men winter and summer, and the output is shipped to points in Missouri, Kansas and Nebraska. The company opened up a new mine, known as No. 9, in 1904, but no mining was done. Mr. C. G. Thurston of Bevier is superintendent.

ROWLAND THOMAS MINE.

This mine, owned and operated by Rowland Thomas, is located north of Bevier, near the city limits. The shaft is 130 feet deep, and the mine operated by steam power. The coal is about 4 feet thick and mined on the pillar and room plan. An average of 6 miners are employed in winter and 2 in summer. The product is sold to dealers in Bevier.

VESTAL MINE.

This mine is located at Callao, on the property of Thomas Vestal, and is operated by Gov. Willsie. The coal averages $4\frac{1}{2}$ feet in thickness, access thereto being by a drift. Horse power is used and a furnace supplies ventilation. Five miners are employed during the winter months. A new drift has recently been opened. The output is sold to the local trade.

WINKLER'S MINE.

B. F. Winkler owns and operates this small mine, which is located six miles south of Macon. Entrance is by a drift and the coal averages 4 feet and 8 inches in thickness. The output is hauled in wagons to Macon and sold to local consumers.

MONITEAU COUNTY.

Moniteau county has an area of 420 square miles. Coal occurs in the county in isolated deposits, and many of those pockets which were good producers a quarter of a century ago, have been about worked out. C. B. Keller of Tipton is operating a mine, and the following notes covers description and product of his property:

KELLER COAL MINE.

Chas. B. Keller owns and operates a coal mine seven miles southeast of Tipton. The shaft is 80 feet deep and horse power is employed in mining. The mine is worked in winter and two miners are employed. The output for the year was 576 tons, valued at \$864.

MONROE COUNTY.

Monroe county has an area of 412,160 acres. Coal occurs in various parts of the county in two seams. The miners, as a rule, work the top or surface seam, which underlies a large portion of the county, but the coal is thin in the surface seam, making the cost of production too great for the local miners to compete with the product shipped in from neighboring counties, where coal is produced in abundance. The output of coal for the year was 1,682 tons.

MONTGOMERY COAL MINE.

W. J. Montgomery owns and operates coal mine one mile west of Paris. The mine has drift entrance and the coal is 20 inches thick. Horse power is used in mining and ventilation natural. The long-wall plan is followed and the coal is undermined. The product is sold in Paris and the output was 1,120 tons, valued at \$2,520.

REDDING COAL MINE.

S. Capson operates a coal mine during the winter on land owned by A. Redding. The mine is near Paris, where the product is consumed. There is shaft entrance, and the coal is 18 inches thick. The output was 562 tons, valued at \$1,686.

MONTGOMERY COUNTY.

There has been some coal mining in Montgomery county during the winter season for a number of years. The operations have been in the vicinity of Wellsville, and the limited product used to supply the local demand. The roof over the deposit is soft in the mines that have been opened, making the production of coal somewhat difficult and expensive. The following description of the mines now operated will give a fair idea of coal mining operations in the county:

HAYS COAL MINE.

Hays Bros. operate a coal mine near Wellsville, on land owned by Hays. The shaft is 60 feet in depth and the coal seam is $2\frac{1}{2}$ feet thick. Horse power is used in mining and ventilation by furnace. Coal is mined on the long-wall plan and undermined and blasted. Six miners are employed during winter, four during summer, and the product is sold at local points along the Wabash railroad. The product for the year was 1,200 tons, valued at \$3,000.

WHITEHEAD COAL MINE.

The Whitehead Coal company, composed of Whitehead & Son, operates a coal mine during winter months on land owned by J. H. Whitehead of Wellsville. The shaft is 20 feet deep and the coal is thirty inches in thickness. Horse power is used in operating and ventilation natural. Mining is done on the long-wall plan, and the product is consumed in the vicinity of the mine. During the year the company mined and sold 1,171 tons of coal, valued at \$2,928.80.

done. The coal, which has an average thickness of 34 inches, is mined on the pillar and room plan. The product is consumed in Unionville and vicinity.

TRENT MINE.

Wilson Trent operates a drift near Rosewood, the output of which is small, the same being consumed in the neighborhood. The coal vein is about 40 inches in thickness and is worked on the pillar and room system.

VINCENT MINE.

This small mine, located east of Mendota, is owned and operated by James Vincent, entrance to the mine being by a shaft. The coal is about three feet in thickness and worked on the pillar and room plan. The product is sold to the Mendota Coal and Mining company.

WILSON'S PIT.

O. L. D. Wilson operates a slope near Mendota on the property of John Leck. The pillar and room plan of operation is employed; average thickness of coal, 34 inches. The output is sold to the local trade.

RALLS COUNTY.

Ralls county embraces 313,600 acres of land, and coal is found and mined in the southwest part of the county. Five operators are producing coal, which is sold to Hannibal dealers and to the Hannibal & St. Louis railroad. Forty-seven miners find employment in the mines during the winter months and 39 miners during the summer. Description of the location and condition of the mines will be found in the following notes:

RALLS COUNTY COAL COMPANY.

This company operates two mines, located one and one-half and two miles, respectively, from Perry, on the land of J. T. Seaton, superintendent, both of which mines have railroad connection with the Hannibal Louis railroad. The shafts in both instances are about 50 feet in and both mines work the same seam of coal, which averages 28 in thickness. Horse power is used in hoisting and furnaces supplied with steam. The long-wall system of operation is employed, the coal undermined. The company employs 18 miners and 5 other men in summer. Most of the product is sold to the Hannibal & St. Louis railroad, the remainder going to the local trade.

CLARK COAL COMPANY.

Fitzpatrick Bros. are owners and operators of this mine, which is located one and a half miles east of Perry. The shaft is 61 feet deep, and the coal averages 27 inches in thickness. A furnace aids in ventilation, horse power being used for hoisting purposes. The long-wall plan of mining is pursued. An average of about 13 miners are employed at the mine. The product is purchased by the St. Louis & Hannibal railroad company. D. B. Fitzpatrick, manager; postoffice, Perry.

PERRY COAL COMPANY.

James Keenan is owner and operator of this mine. It is located one and one-half miles east of Perry, and has shipping connections with the Hannibal & St. Louis railroad. The coal is 27 inches in average thickness and the shaft is 65 feet in depth. Horse power is used for hoisting and a furnace aids in ventilating the mine. Employment is given to an average of 15 miners and other men. Last year an iron track was laid on all main entries and 750 feet of face was opened. The product is sold to Hannibal dealers.

BARGER MINE.

This small mine, located two miles north of Perry, is owned and operated by John Barger. The coal is 28 inches in average thickness, access thereto being by a slope. The output is consumed locally.

SALLING MINE.

This mine is located 2 miles northeast of Perry. R. & F. Elmer Wells are owners and operators. There was little work done in this mine in 1904, the limited output being consumed in the neighborhood. The mine is entered by a drift opening, the thickness of the coal being about 26 inches. Postoffice address of operators, Centre, Mo.

RANDOLPH COUNTY.

The surface area of Randolph county is 470 square miles. Coal occurs in almost every part of the county, and while it ranks about third among the coal producing counties of the State, the possibilities for mining development are almost limitless, and the time may come when coal production in the county will equal any county in the State. That

mining industry of Randolph county is to receive new momentum is evidenced in the organization of the Randolph-Macon Coal company, which occurred in January of 1905. This company has a fully paid-up capital stock of \$5,000,000.00, and owns 50,000 acres of land, situated in Macon, Randolph and Howard counties, and has purchased the following companies:

Wabash Coal Co., Huntsville, Mo.

Hollingsworth Coal Co., Huntsville, Mo.

Standard Coal Co., Renick, Mo.

Elliott Coal Co., Elliott, Mo.

Bolen-Darnall Coal Co., Higbee, Mo.

Interstate Coal and Mining Co., Higbee, Mo.

Coal Creek Coal and Merc. Co., Yates, Mo.

The general office of the company is at Huntsville and the officers of the company are:

Jas. T. Gardiner, president, address, No. 26 Cortland street, New York, N. Y.

W. T. Van Brunt, vice-president, 120 Broadway, New York, N. Y.

Howard Dutcher, secretary and auditor, 26 Cortland street, New York.

W. E. Murlin, general manager, Huntsville, Mo.

The company owns and operates eleven mines in Randolph and one mine in Macon county, which is leased to the Central Coal and Coke company.

The mine numbers and location are as follows:

Mines No. 1, 2 and 3, Huntsville, Mo.

Mine No. 4, Renick, Mo.

Mine No. 5, Elliott, Mo.

Mines Nos. 6 and 10, Yates, Mo.

Mines Nos. 7, 8, 9 and 11, Higbee, Mo.

BOLEN-DARNALL COAL COMPANY.

This company owns and operates two mines, known as Nos. 7 and near Higbee, both having connections with the Chicago & Alton railroad.

Mine No. 7 is located about a quarter of a mile west of Higbee. It entered by a shaft 150 feet in depth and equipped with good machinery.

The mine is worked on the long-wall plan, the average thickness of coal seam being 3 feet and 10 inches. A fan, 14 feet in diameter, furnishes ventilation. The shaft was recribbed in 1904, and improvements made.

Mine No. 8 is located two miles east of Higbee and on the same coal seam as No. 7. This shaft is 165 feet deep and operated with good machinery. Ventilation is supplied by a 14-foot fan, the same as at No. 7. The pillar and room plan is found most suitable for operating this mine. The company sunk a deep well near the mine in 1904 for supplying the boiler and camp with water.

These two mines jointly give employment to an average of 92 miners and 38 other men. The product, which in 1904 was 105,025 tons, is shipped to points on the C. & A. railroad, a large portion being consumed by the engines of that road. There being no report of any inspection made by the late Coal Mine Inspector during 1904, we are unable to furnish detailed information respecting the condition of these mines.

CRONAN COAL COMPANY.

Jno. Cronan operates a drift three miles northwest of Moberly, on the land of Smith & Givin. The coal is 3 feet 8 inches thick and worked on the pillar and room plan. A furnace supplies ventilation. The product is hauled away in wagons and sold to dealers in Moberly. During the year the operator opened two drifts, built an office and platform and sunk two air shafts.

CENTRAL COAL AND COKE COMPANY.

This company owns and operates two mines in this county, east of Huntsville, both of which have connections with the Wabash railroad.

Mine No. 5, located at Kimberly, is comparatively new, having been opened in 1903. Entrance to the mine is by a drift; hoisting done by steam power; ventilation supplied by a furnace. The coal is about 4 feet in thickness and mined on the pillar and room plan. Employment is given to an average of 37 miners and 19 other men at this mine. The product is shipped via the Wabash railroad to points in Missouri, Kansas, Nebraska, Iowa and Illinois. Mine closed down temporarily in October, 1904.

Mine No. 11 is located at Kimberly. The coal averages 4 feet and 3 inches in thickness, entrance to mine being by a slope opening. Mine is equipped with good machinery. A furnace supplies ventilation, hoisting being done by steam power. The pillar and room plan of operation is pursued and the coal blasted off the solid. At this mine employment is given to 75 miners and 35 others. It was temporarily closed down in September, 1904. John S. Davis, superintendent.

ANNUAL REPORT OF THE

MINING DIVISION

The following is a summary of the work done by the Mining Division during the year 1911. The division has been very busy in the past year, and has accomplished a great deal of work. The most important work has been the construction of the new mine, which is now in operation. The division has also been very busy in the repair and maintenance of the old mines. The work has been done in a very efficient manner, and the division has been very successful in its work.

NEW MINE

The new mine is located in the north-west corner of the section. It is a strip pit, the average thickness of the coal being about three feet. The product is shipped to the Great Northern Railroad. The mine is now in operation, and is producing a large amount of coal. The division has been very busy in the repair and maintenance of the old mines. The work has been done in a very efficient manner, and the division has been very successful in its work.

OLD MINE

The old mine is located in the south-east corner of the section. It is a strip pit, the average thickness of the coal being about three feet. The product is shipped to the Great Northern Railroad. The mine is now in operation, and is producing a large amount of coal. The division has been very busy in the repair and maintenance of the old mines. The work has been done in a very efficient manner, and the division has been very successful in its work.

PAID FOR

The following is a summary of the work done by the Mining Division during the year 1911. The division has been very busy in the past year, and has accomplished a great deal of work. The most important work has been the construction of the new mine, which is now in operation. The division has also been very busy in the repair and maintenance of the old mines. The work has been done in a very efficient manner, and the division has been very successful in its work.

MINING DIVISION

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and 6 inches in thickness. Ventilation is obtained by means of a fan 14 feet in diameter. Steam power is used in hoisting and the coal is mined on the pillar and room plan. The mine gives employment to 110 miners and 45 other men, and the product is shipped to Omaha and local points on the Wabash railroad. This mine was purchased from the Mid-state Coal Co., April 1, 1904.

INTERSTATE MINING COMPANY.

This company owns and operates a mine located one and one-fourth miles southwest of Higbee, having shipping connections with the M., K. & T. railroad. The shaft, which is 110 feet in depth., is equipped with good machinery. Ventilation is secured by a 12-foot fan. The coal averages 3 feet 8 inches in thickness and is mined both on the long-wall and pillar and room plan. Employment is given to an average of 116 miners and 31 other men, winter and summer, in this mine. The output is shipped to towns along the line of the M., K. & T. railway. During the year the company erected 9 dwellings for the miners. Mr. Wm. Walton is secretary and superintendent; postoffice at Higbee.

MID-STATE COAL COMPANY.

The mine operated by this company, near the town of Huntsville, was sold April 1, 1904, to the Hollingsworth Coal Co. The product of the mine between January 1 and April 1, 1904, was 29,375 tons, the same being shipped to Kansas City, Omaha and intermediate points.

MITCHELL MINE.

W. E. Mitchell operates a mine which is located near Huntsville. The coal vein is about 4 feet in thickness, access thereto being by a slope entrance. The product is hauled away in wagons and shipped over the Wabash railroad to Glasgow, Brunswick and other local towns.

WABASH COAL COMPANY.

This company owns and operates two large producing mines, known as Nos. 1 and 2, a mile and a half east of Huntsville, each of which has shipping connection with the Wabash Railroad by means of spurs running from the mines to the main line.

Mine No. 1 is entered by a drift opening and ventilated by means of a furnace. Steam power is used in operating. The coal averages 4 feet 2 inches in thickness and is worked on the pillar and room

the coal mines of the county for the year was 70,118 tons of coal, valued at \$125,853. Following is a description of the mines of the county and a statement as to their locations and condition:

BLACK BIRD BLOCK COAL CO. MINE.

This mine, located at Blackbird, on the property of the Blackbird Block Coal Co., is operated by C. W. Lane, whose postoffice address is Centerville, Iowa. The mine has shipping connections with the C. B. & Q. railway. The average thickness of the coal is 32 inches, access thereto being by a slope opening. Gasoline power is used and a furnace supplies ventilation. The room and pillar plan of operation is employed, the coal being undermined. Employment is given to 45 miners in winter and 30 in summer. The product is shipped to points in Missouri, Iowa, Kansas and Nebraska. A. P. Anderson is superintendent.

H. B. & H. COAL COMPANY.

The above-named company own and operate two small mines located near Mapleton. The mines, which have been opened but recently, are entered by drifts, and the output, so far, is very small, the same being shipped to Kirksville. Thos. B. Hodges is superintendent.

MENDOTA COAL AND MINING COMPANY.

This company owns four mines, known as Nos. 2, 7, 8 and 9, at Mendota, all of which have connections, by means of switches, with the C., B. & Q. railway.

Mine No. 7 is operated by Hardy Medlin, lessee, who has contracted with the company to put the coal on cars at a stated price. The mine is located about a mile northeast of Mendota and is entered by a slope, ventilation being by a furnace. The coal averages 36 inches in thickness and is mined both on the pillar and room and the long-wall systems. Employment is given to 24 miners and 3 other men at this mine. As intimated, the product is purchased and disposed of by the Mendota C. and M. Co., lessors. A new tipple was put up and new air shafts sunk in this mine during the year.

Mine No. 8, operated by W. F. Yates on the same plan as in the case of mine No. 7, is located about half a mile southwest of the latter and is on the same coal seam. Entrance is by a slope, the average thickness of the coal being 3 feet. The mine was opened about six years ago, *but the coal proved faulty, and the present operator is engaged in pulling the pillars, the product being purchased by the company for a given price f. o. b. cars.* The mine will soon be abandoned.

Moberly. The coal is 4 feet 5 inches in average thickness and worked on the pillar and room plan. It is a slope entrance; ventilation natural. The product is sold to dealers in Moberly. Improvements in the way of fixing the main entry and air course were made during the year.

Adkisson & Kasey operate a drift near Moberly, on the land of John Skinner. A 6-foot fan supplies ventilation. The mine was opened in September, 1904, and only a small amount of coal extracted during the remaining months of the year.

KIMBERLY POSTOFFICE.

W. T. Vaughan operates a drift at Kimberly. It was opened in 1904, and but little mining done. A furnace supplies ventilation to the mine. Thickness of coal, 54 inches.

RAY COUNTY.

Ray county embraces 584 square miles, or 373,760 acres. The entire county is underlaid with coal, and its mining development has placed it among the large coal producing counties of the State. The coal seam mined is small when compared with many other counties, being only about 18 inches, but the quality of the coal, the nature of the roof and the economic system of working it, together with the short haul to market, gives the operators an advantage which enables them to compete with producers in other counties. The system upon which the mines of the county are operated is confined almost exclusively to the long-wall plan. The principal mines are located at Camden, Fleming and Richmond, while smaller mines are operated to supply local demand in various other parts of the county. Following is a description of the mines, locations and condition:

CALNEN COAL COMPANY.

This company owns and operates Mine No. 18, located near Richmond. The mine is entered by a shaft 100 feet deep, the average thickness of the coal vein being 22 inches. Steam power is used in hoisting and a fan, 8 feet in diameter, supplies the ventilation. The coal is undermined and worked on the long-wall plan. Employment is given to 13 miners and 3 other men. The product is shipped to St. Joseph. James Calnen, superintendent, Richmond.

done. The coal, which has an average thickness of 34 inches, is mined on the pillar and room plan. The product is consumed in Unionville and vicinity.

TRENT MINE.

Wilson Trent operates a drift near Rosewood, the output of which is small, the same being consumed in the neighborhood. The coal vein is about 40 inches in thickness and is worked on the pillar and room system.

VINCENT MINE.

This small mine, located east of Mendota, is owned and operated by James Vincent, entrance to the mine being by a shaft. The coal is about three feet in thickness and worked on the pillar and room plan. The product is sold to the Mendota Coal and Mining company.

WILSON'S PIT.

O. L. D. Wilson operates a slope near Mendota on the property of John Leck. The pillar and room plan of operation is employed; average thickness of coal, 34 inches. The output is sold to the local trade.

RAILS COUNTY.

Rails county embraces 313,000 acres of land, and coal is found and mined in the southwest part of the county. Five operators are producing coal, which is sold to Hannibal dealers and to the Hannibal & St. Louis railroad. Forty-seven miners find employment in the mines during the winter months and 39 miners during the summer. Description of the location and condition of the mines will be found in the following notes:

RAILS COUNTY COAL COMPANY.

This company operates two mines, located one and one-half and two miles, respectively, from Perry, on the land of J. T. Seaton, superintendent, both of which mines have railroad connection with the Hannibal & St. Louis railroad. The shafts in both instances are about 50 feet in depth, and both mines work the same seam of coal, which averages 28 inches in thickness. Horse power is used in hoisting and furnaces supply ventilation. The long-wall system of operation is employed, the coal *being undermined*. The company employs 18 miners and 5 other men *in winter and summer*. Most of the product is sold to the Hannibal & St. Louis railroad, the remainder going to the local trade.

CLARK COAL COMPANY.

Fitzpatrick Bros. are owners and operators of this mine, which is located one and a half miles east of Perry. The shaft is 61 feet deep, and the coal averages 27 inches in thickness. A furnace aids in ventilation, horse power being used for hoisting purposes. The long-wall plan of mining is pursued. An average of about 13 miners are employed at the mine. The product is purchased by the St. Louis & Hannibal railroad company. D. B. Fitzpatrick, manager; postoffice, Perry.

PERRY COAL COMPANY.

James Keenan is owner and operator of this mine. It is located one and one-half miles east of Perry, and has shipping connections with the Hannibal & St. Louis railroad. The coal is 27 inches in average thickness and the shaft is 65 feet in depth. Horse power is used for hoisting and a furnace aids in ventilating the mine. Employment is given to an average of 15 miners and other men. Last year an iron track was laid on all main entries and 750 feet of face was opened. The product is sold to Hannibal dealers.

BARGER MINE.

This small mine, located two miles north of Perry, is owned and operated by John Barger. The coal is 28 inches in average thickness, access thereto being by a slope. The output is consumed locally.

SALLING MINE.

This mine is located 2 miles northeast of Perry. R. & F. Elmer Wells are owners and operators. There was little work done in this mine in 1904, the limited output being consumed in the neighborhood. The mine is entered by a drift opening, the thickness of the coal being about 26 inches. Postoffice address of operators, Centre, Mo.

RANDOLPH COUNTY.

The surface area of Randolph county is 470 square miles. Coal occurs in almost every part of the county, and while it ranks about third among the coal producing counties of the State, the possibilities for *mining development* are almost limitless, and the time may come when coal *production in the county* will equal any county in the State. That th

HUBBELL COAL MINE.

This company owns and operates a mine known as No. 10, located north of Richmond, and having shipping connection with the Santa Fe railroad. The mine is ventilated by a furnace and horse power is used in hoisting. Shaft is 115 feet deep; coal thickness, 26 inches. Mining is done on the long-wall plan. This mine employs an average of 45 miners and 7 other men. The output is shipped to Kansas City, St. Joe and intermediate points. Chas. G. Hubbell, manager.

JOS. HUSTON MINE.

This small mine, located six miles west of Norborne, is operated by Jos. Huston to supply the local trade. It is entered by a slope. Coal thickness, 20 inches; ventilation by a furnace. Long-wall plan of mining.

MERCANTILE COAL AND MINING COMPANY.

This company owns and operates a mine known as No. 17, located one mile north of Richmond, and having connection with the St. Joe branch of the Santa Fe by means of a spur track. The mine is entered by a shaft 198 feet deep. Hoisting is done by steam power and a 10-foot fan furnishes ventilation. The coal, which has an average of 24 inches in thickness, is undermined and worked on the long-wall plan. Employment is given to 60 miners and 15 other men, winter and summer, at this mine. The output is shipped to Kansas City and St. Joseph. Forty new boxes were constructed during the year. J. W. Atwill, St. Joseph, Mo., is president of the company.

SEVIER MINE.

This mine, which is located a short distance southeast of Richmond, on the land of Charles Sevier, is operated by Ottman & Swope. It is entered by a slope, ventilated by a furnace and operated by horse power. The coal thickness is 26 inches and mine is worked on the long-wall plan. The roof caved in late in 1904, and work was for a considerable time suspended. Output consumed in Richmond and vicinity.

PENCE BROS. & CALNEN.

Mine No. 6, operated by this company, is located near Richmond, on the land owned by Pence & Calnen. Mine is entered by a shaft 90 feet in depth, the coal thickness being 22 inches. Operated by steam power and ventilated by means of an 8-foot fan. Coal worked on the

Mine No. 8 is located two miles east of Higbee and on the same coal seam as No. 7. This shaft is 165 feet deep and operated with good machinery. Ventilation is supplied by a 14-foot fan, the same as at No. 7. The pillar and room plan is found most suitable for operating this mine. The company sunk a deep well near the mine in 1904 for supplying the boiler and camp with water.

These two mines jointly give employment to an average of 92 miners and 38 other men. The product, which in 1904 was 105,025 tons, is shipped to points on the C. & A. railroad, a large portion being consumed by the engines of that road. There being no report of any inspection made by the late Coal Mine Inspector during 1904, we are unable to furnish detailed information respecting the condition of these mines.

CRONAN COAL COMPANY.

Jno. Cronan operates a drift three miles northwest of Moberly, on the land of Smith & Givin. The coal is 3 feet 8 inches thick and worked on the pillar and room plan. A furnace supplies ventilation. The product is hauled away in wagons and sold to dealers in Moberly. During the year the operator opened two drifts, built an office and platform and sunk two air shafts.

CENTRAL COAL AND COKE COMPANY.

This company owns and operates two mines in this county, east of Huntsville, both of which have connections with the Wabash railroad.

Mine No. 5, located at Kimberly, is comparatively new, having been opened in 1903. Entrance to the mine is by a drift; hoisting done by steam power; ventilation supplied by a furnace. The coal is about 4 feet in thickness and mined on the pillar and room plan. Employment is given to an average of 37 miners and 19 other men at this mine. The product is shipped via the Wabash railroad to points in Missouri, Kansas, Nebraska, Iowa and Illinois. Mine closed down temporarily in October, 1904.

Mine No. 11 is located at Kimberly. The coal averages 4 feet and 3 inches in thickness, entrance to mine being by a slope opening. Mine is equipped with good machinery. A furnace supplies ventilation, hoisting being done by steam power. The pillar and room plan of operation is pursued and the coal blasted off the solid. At this mine employment is given to 75 miners and 35 others. It was temporarily closed down in September, 1904. John S. Davis, superintendent.

the long-wall and pillar and room plans are employed in mining the coal. The product is shipped to points along the C. & A. railroad. The mine was opened out and many improvements made in 1904. William H. Yates is superintendent, with postoffice at Yates.

EAGLE COAL AND MERCANTILE COMPANY.

The mine owned and operated by this company is located near Yates. The coal is 42 inches in average thickness and worked on the pillar and room plan. Mine is entered by a shaft 97 feet in depth, ventilation being furnished by a 14-foot fan. The output is shipped to Kansas City and Omaha. This mine employs an average of 40 men and 8 other men. John Floyd is superintendent; postoffice at Yates.

ELLIOTT COAL COMPANY.

This company owns and operates a mine located a mile and a half northwest of Elliott, having shipping connections with the M., K. & T. railroad by a spur extending from the mine to the main track. The shaft is 137 feet in depth and equipped with good machinery. Ventilation is furnished by a fan 12 feet in diameter. The coal is about 42 inches in thickness and is mined on the pillar and room system. The coal is shipped to points on the M., K. & T. railroad. During the year 1904 the output was 10,000 tons.

and 6 inches in thickness. Ventilation is obtained by means of a fan 14 feet in diameter. Steam power is used in hoisting and the coal is mined on the pillar and room plan. The mine gives employment to 110 miners and 45 other men, and the product is shipped to Omaha and local points on the Wabash railroad. This mine was purchased from the Mid-state Coal Co., April 1, 1904.

INTERSTATE MINING COMPANY.

This company owns and operates a mine located one and one-fourth miles southwest of Higbee, having shipping connections with the M., K. & T. railroad. The shaft, which is 110 feet in depth., is equipped with good machinery. Ventilation is secured by a 12-foot fan. The coal averages 3 feet 8 inches in thickness and is mined both on the long-wall and pillar and room plan. Employment is given to an average of 116 miners and 31 other men, winter and summer, in this mine. The output is shipped to towns along the line of the M., K. & T. railway. During the year the company erected 9 dwellings for the miners. Mr. Wm. Walton is secretary and superintendent; postoffice at Higbee.

MID-STATE COAL COMPANY.

The mine operated by this company, near the town of Huntsville, was sold April 1, 1904, to the Hollingsworth Coal Co. The product of the mine between January 1 and April 1, 1904, was 29,375 tons, the same being shipped to Kansas City, Omaha and intermediate points.

MITCHELL MINE.

W. E. Mitchell operates a mine which is located near Huntsville. The coal vein is about 4 feet in thickness, access thereto being by a slope entrance. The product is hauled away in wagons and shipped over the Wabash railroad to Glasgow, Brunswick and other local towns.

WABASH COAL COMPANY.

This company owns and operates two large producing mines, known as Nos. 1 and 2, a mile and a half east of Huntsville, each of which has shipping connection with the Wabash Railroad by means of spurs running from the mines to the main line.

Mine No. 1 is entered by a drift opening and ventilated by means of a furnace. Steam power is used in operating. The coal averages *4 feet 2 inches in thickness* and is worked on the pillar and room plan

and blasted off the solid. This mine gives employment to 125 miners and 25 other men winter and summer. The output is shipped to points along the Wabash railroad. A new boiler and screen were installed and other improvements made.

Mine No. 2 has a shaft entrance 98 feet in depth, the same being well equipped with good machinery. This is a new mine, being opened in 1904. It is ventilated by means of a fan 14 feet in diameter. The pillar and room plan of operating is followed and the coal blasted off the solid. Employment is given to an average of 130 miners and 25 other men at this mine. W. E. Murlin is general manager, with postoffice at Huntsville.

STANDARD COAL COMPANY.

The mine operated by this company is located a short distance south of Renick, and has shipping connection with the Wabash railroad by a spur 4,000 feet long from the mine to the main line. The shaft is 110 feet in depth and equipped with modern machinery. Steam power is used in hoisting and a 10-foot fan furnishes ventilation. The pillar and room plan of operation is employed and the coal blasted off the solid. The output is shipped over the Wabash to Kansas City, Omaha and intermediate points. An average of 50 miners and 14 others are employed at this mine. The main office of the company is at Kansas City, with local office at Renick. Mr. G. Morris is superintendent.

RANDOLPH COUNTY COAL COMPANY.

This company has recently sold its property to the Randolph-Macon Coal Co. The shaft, which is located one mile east of Yates, was completed in August, 1904, and but little mining done during the remaining months of the year.

L. B. WILLIAMS.

This mine is located near Moberly. It has a slope entrance and the mine is ventilated by means of a furnace. The coal has an average thickness of 50 inches and is worked on the pillar and room plan. The product is consumed in Moberly and vicinity.

MOBERLY POSTOFFICE.

James McCullough operates a drift $3\frac{1}{2}$ miles northwest of Moberly. The output is small and is consumed at Moberly.

J. W. Pilkington owns and operates a mine 3 miles northwest of

Moberly. The coal is 4 feet 5 inches in average thickness and worked on the pillar and room plan. It is a slope entrance; ventilation natural. The product is sold to dealers in Moberly. Improvements in the way of fixing the main entry and air course were made during the year.

Adkisson & Kasey operate a drift near Moberly, on the land of John Skinner. A 6-foot fan supplies ventilation. The mine was opened in September, 1904, and only a small amount of coal extracted during the remaining months of the year.

KIMBERLY POSTOFFICE.

W. T. Vaughan operates a drift at Kimberly. It was opened in 1904, and but little mining done. A furnace supplies ventilation to the mine. Thickness of coal, 54 inches.

RAY COUNTY.

Ray county embraces 584 square miles, or 373,760 acres. The entire county is underlaid with coal, and its mining development has placed it among the large coal producing counties of the State. The coal seam mined is small when compared with many other counties, being only about 18 inches, but the quality of the coal, the nature of the roof and the economic system of working it, together with the short haul to market, gives the operators an advantage which enables them to compete with producers in other counties. The system upon which the mines of the county are operated is confined almost exclusively to the long-wall plan. The principal mines are located at Camden, Fleming and Richmond, while smaller mines are operated to supply local demand in various other parts of the county. Following is a description of the mines, locations and condition:

CALNEN COAL COMPANY.

This company owns and operates Mine No. 18, located near Richmond. The mine is entered by a shaft 100 feet deep, the average thickness of the coal vein being 22 inches. Steam power is used in hoisting and a fan, 8 feet in diameter, supplies the ventilation. The coal is undermined and worked on the long-wall plan. Employment is given to 13 miners and 3 other men. The product is shipped to St. Joseph. James Calnen, superintendent, Richmond.

CAMPBELL MINE.

This mine is operated by C. C. Ballard. It is located near Hardin, on the property of Mrs. Margaret Campbell. The mine is entered by a drift and a furnace supplies ventilation, the pillar and room plan of operation being employed in extracting the coal. The output is consumed in the neighborhood. A gasoline engine for pumping water was installed during the year.

FLEMING MINE.

W. E. Murlin operates this mine, which is located near Fleming, on the property of the Central Coal and Coke Co., and has shipping connections with the Wabash and Santa Fe railroads. The depth of the shaft is 70 feet, and the thickness of the coal seam, 18 inches. Both steam and electric power is used in operating the mine, which is ventilated by a 12-foot fan. The coal is mined on the long-wall plan. The product is shipped to points on the two railroads mentioned. This mine gives employment to an average of 95 miners and other men.

RED FLAG MINE.

This mine is located a mile north of Richmond, on the land of A. R. Chenault, and is operated by C. A. Chenault. Entrance to the mine is by a shaft 100 feet in depth, the coal averaging 28 inches in thickness. Horse power is used for hoisting and a furnace supplies ventilation. A new pump and drum and other improvements were installed during the year. The product is disposed of to the local trade.

JACOB CLARK MINE.

This mine, owned and operated by Jacob Clark, is located four miles north of Hardin. It is entered by a shaft 40 feet in depth, the coal thickness being 26 inches. Hoisting is done by horse power, and a small fan furnishes ventilation. The coal is undermined and worked on the long-wall plan. The output, which is small, is hauled away in wagons and sold to local consumers.

CRAWFORD-WILSON COAL MINE.

Mine No. 8, owned and operated by this company, is located at Richmond, and has connection with the St. Joe branch of the Santa Fe railroad. Entrance to the mine is by a shaft 110 feet in depth, and steam

power is employed in hoisting. A fan, 10 feet in diameter, furnishes ventilation. The coal, which is 26 inches in thickness, is mined on the long-wall system. A new track was laid and new cages and gasoline engine and pump installed in 1904. The product is shipped to St. Joseph, Mo., and Atchison, Kans.

BLACK DIAMOND MINE.

Crispin & Ward own and operate this mine, which is located within the corporate limits of Richmond. The shaft is 85 feet in depth; coal thickness, two feet. Horse power is used for hoisting and a furnace supplies ventilation. The long-wall plan of working the coal is followed. Output is shipped to St. Joseph, a part being consumed in Richmond.

JIM DEAR MINE.

This small mine, owned and operated by J. B. Dear, is located 2½ miles northeast of Richmond. Shaft is 45 feet deep; hoisting by horse power; natural ventilation. Coal is 24 inches thick, worked on the long-wall plan. An air shaft was sunk during the year. The product is consumed in the neighborhood.

FOWLER COAL AND MINING COMPANY.

This company owns and operates a mine known as "Klondyke No. 1," located near Richmond. Entrance to mine is by shaft 45 feet deep. Horse power is used in hoisting and a furnace supplies ventilation. The coal is 26 inches in thickness and mined on the long-wall plan. Employment is given to 40 miners and 9 other men at this mine in winter; not worked in summer. The mine has shipping connections with the St. Joe branch of the Santa Fe railroad. Product is shipped to Kansas City and St. Joseph.

GANT COAL MINE.

This company operates a small mine east of Richmond to supply local demand. The coal is 26 inches in thickness, access thereto being by a shaft 60 feet deep. Hoisting is done by horse power and a furnace aids in ventilating mine. Mining is done on the long-wall plan. Wm. R. Gant, superintendent, Richmond.

HUBBELL COAL MINE.

This company owns and operates a mine known as No. 10, located north of Richmond, and having shipping connection with the Santa Fe railroad. The mine is ventilated by a furnace and horse power is used in hoisting. Shaft is 115 feet deep; coal thickness, 26 inches. Mining is done on the long-wall plan. This mine employs an average of 45 miners and 7 other men. The output is shipped to Kansas City, St. Joe and intermediate points. Chas. G. Hubbell, manager.

JOS. HUSTON MINE.

This small mine, located six miles west of Norborne, is operated by Jos. Huston to supply the local trade. It is entered by a slope. Coal thickness, 20 inches; ventilation by a furnace. Long-wall plan of mining.

MERCANTILE COAL AND MINING COMPANY.

This company owns and operates a mine known as No. 17, located one mile north of Richmond, and having connection with the St. Joe branch of the Santa Fe by means of a spur track. The mine is entered by a shaft 198 feet deep. Hoisting is done by steam power and a 10-foot fan furnishes ventilation. The coal, which has an average of 24 inches in thickness, is undermined and worked on the long-wall plan. Employment is given to 60 miners and 15 other men, winter and summer, at this mine. The output is shipped to Kansas City and St. Joseph. Forty new boxes were constructed during the year. J. W. Atwill, St. Joseph, Mo., is president of the company.

SEVIER MINE.

This mine, which is located a short distance southeast of Richmond, on the land of Charles Sevier, is operated by Ottman & Swope. It is entered by a slope, ventilated by a furnace and operated by horse power. The coal thickness is 26 inches and mine is worked on the long-wall plan. The roof caved in late in 1904, and work was for a considerable time suspended. Output consumed in Richmond and vicinity.

PENCE BROS. & CALNEN.

Mine No. 6, operated by this company, is located near Richmond, on the land owned by Pence & Calnen. Mine is entered by a shaft 90 feet in depth, the coal thickness being 22 inches. Operated by steam power and ventilated by means of an 8-foot fan. Coal worked on the

EAGLE VALLEY COAL CO.

This company has just opened up a new mine, which is located five miles northwest of Queen City, and which promises to be an excellent producer. The depth of the shaft is 63 feet, and thickness of the coal vein, 32 inches. Mine is operated on the pillar and room plan at present, but as soon as it is thoroughly opened up the long-wall system will be followed. The quality of the coal is very good and it has an excellent roof. W. A. Rinehart, general manager; postoffice address, Queen City, Mo.

CYCLONE MINE.

Ira Golston is the owner and operator of this small mine, located five miles west of Queen city. Part of the roof caved in last year and work was suspended for several months, but the damage has since been repaired. Mine is entered by a shaft 65 feet deep, horse power being used for hoisting. The coal is 30 inches in thickness and is mined on the pillar and room plan. The output in 1904 was inconsequential owing to the trouble referred to.

PHOENIX MINE.

This mine is owned and operated by B. F. Blansett. It is located near Coatsville, close to the Chariton river, and is entered by a drift. Horse power is used in operating and a furnace ventilates the mine. The pillar and room plan is pursued in extracting the coal, which is 44 inches in thickness and is overlaid by a firm roof. The mine has the disadvantage of being located too far away from a railroad and the market for the coal is altogether local.

SNAKE DEN MINE.

Mock & Houston operate this mine, located at Coatesville, on the land of Mock & Bro. Entrance is by a drift; ventilation by furnace. The coal is four feet in thickness and mined on the pillar and room system. Product sold to the local trade.

VERNON COUNTY.

Vernon county has a surface area of 850 square miles. The coal belt which underlies Bates extends into and underlies Vernon, but the coal in this section is irregular, faulty and uneven, making the mine

connected with the Wabash and Santa Fe railroads by switch tracks. The shafts, which are of equal depth, are well equipped with machinery and ventilated by fans. Coal thickness, 22 inches.

Mines Nos. 4, 5, 9, 12 and 14 are located in the vicinity of Richmond and have shipping connections with the Santa Fe railroad, St. Joe branch. The shafts, of varying depths, are well equipped with machinery and ventilated by means of fans, the long-wall plan of operation being common to all. The mines, conjunctively, give employment to 175 miners and 45 other men. Output is shipped to Kansas City, St. Joe and other points. No report of any inspection being on file in this office, a more adequate description is impracticable.

WASHINGTON MINE.

This mine is located near Richmond on the land of S. H. Washington and operated by Washington & Co. The shaft is 100 feet deep; hoisting by horse power; ventilation aided by a furnace. The coal, averaging 26 inches in thickness, is worked on the long-wall plan and undermined. The product is shipped to St. Joe; part going to supply the home demand. A new steam pump was installed and new air course constructed during the year. S. H. Washington, Richmond, is superintendent.

MAJOR GRIMES MINE.

Hugh Blair is the operator of this mine, which is located on the property of Withers & Linville, near Knoxville. It is entered by a shaft 100 feet deep and ventilated by a small fan. Hoisting by horse power; thickness of coal, 24 inches. Mining done on the long-wall plan. The product goes to supply local demand.

FRANK ATWARD & SON.

This is known as Mine No. 17, located near Richmond. Shaft is 180 feet; thickness of coal, 26 inches; horse power; ventilation by fan. Mine operated on long-wall plan. The output is shipped to St. Joseph.

HARDIN POSTOFFICE.

Joseph Loeven operates a drift near Hardin, the output of which is consumed locally. Average thickness of coal, 20 inches. Coal extracted by undermining on long-wall plan.

Theodore Loeven operates a drift at Hardin. A furnace supplies ventilation. Coal is about 20 inches in thickness and mined on the long-wall plan. The product is consumed in the neighborhood.

PALMER MINE.

This is a strip pit, operated by J. W. Flake, on the Palmer property, four and a half miles east of Harwood; postoffice address of operator, Schell City. The coal is 24 inches in thickness and the product is sold to local consumers.

MEEK & CO.

The above company operate a strip pit near Panama, on the land of N. Ingram. Average thickness of coal, three feet. Output shipped to towns in Missouri and Kansas. Postoffice address of operators is Rich Hill, Mo.

J. L. BROWN.

This strip pit is on the land of Philipp Lyons, near Walker, and is operated by J. L. Brown. Coal averages 20 inches in thickness. The product goes to supply local trade.

J. A. LOWE.

This is a slope opening. Mine located at Sheldon and owned and operated by J. A. Lowe. Worked by hand power; natural ventilation; average thickness of coal vein, 34 inches. Pillar and room plan of operation. Product purchased by local consumers.

D. K. PERKINS.

This mine, which has a slope entrance, is located half a mile west of Moundville, on land of W. A. McAllister, and is operated by D. K. Perkins. Horse power is used in operating and a furnace supplies ventilation. The coal, which averages 28 inches in thickness, is mined on the pillar and room plan and shipped to Nevada and other local towns.

F. M. RADDLE.

Mr. Raddle owns and operates this strip pit, located two miles west of Harwood. The coal has an average thickness of three feet. The output is very limited and is consumed by local purchasers.

coal is 20 inches thick. . Horse power is used to hoist the coal and the mine is worked on the pillar and room plan. The output was 800 tons, valued at \$1,600.

WOODEN COAL MINE.

H. M. Wooden owns and operates a coal mine near Monegaw Springs. The mine has drift entrance and the coal is three feet thick. The mine is worked for a short time during winter to supply home and local demand. The output was 90 tons.

BEVER COAL MINE.

Henry Bever operates a coal mine near Appleton City, located on land owned by Robert A. Mann. The mine is a strip-pit, with coal two feet thick. Horse power is used in operating and the mine is only worked during winter. The product was 200 tons, which were sold in Appleton City.

SCHUYLER COUNTY.

Schuyler county has an area of 336 square miles, the greater portion of which is underlaid by two coal seams. For lack of shipping facilities in the western part of the county, where the coal fields are the most inviting, the county has not developed the coal industry as it should have done otherwise, but the Iowa and St. Louis railroad having been constructed through that part of the county, coal mining will materially increase every year for several years to come, and it is likely now that the output of the county will rapidly increase until it takes a more prominent place among the coal producing counties.

MANUFACTURERS' COAL AND COKE CO.

This company owns in fee, or controls by lease, large tracts of land in Schuyler and Putnam counties which are not included in the reports of its operated mines. Mine No. 10, owned and operated by the company, is located near the Missouri-Iowa line, within one mile of Coal City, Iowa. It is entered by a slope, the coal being brought to the surface by machinery. The mine is ventilated by means of a fan 12 feet in diameter, and the coal, which is 40 inches in thickness, is mined on the pillar and room plan. Employment is given to an average of 46 miners and 10 other men at the mine, and the product is shipped to *points in Missouri, Iowa, Kansas and Nebraska.* G. W. Evans, superintendent, Connelsville.

EMPLOYES, ETC., BY COUNTIES, 1904.

Powder		No mules work'd		Employees.						Tons of coal mined..	Av. price received at mines....	Amount received at mines for 1000 out-put.	Unusual- ties.		Office number
Kegs..	Cost to miners	Winter.....	Summer..	Miners.		Day and outside men.		Total.					Fatal...	Non-fatal...	
				Winter...	Summer	Winter.	Summer	Winter....	Summer ..						
28,288	\$77,840 00	85	81	1,173	990	406	400	1,579	1,390	658,568	\$1 54	\$991,475	9		1
60	100 00	7	7	148	123	59	40	207	163	42,578	1 24	76,580			2
11,355	22,465 70	28	25	237	209	121	108	458	377	199,978	1 45	290,860			3
5,772	11,267 75	14	19	288	123	93	62	379	175	152,406	1 40	212,901			4
1,153	2,303 00	6	2	96	73	18	12	114	86	85,865	1 82	65,408			5
		9	2	70	30	10	7	80	37	11,866	2 12	25,140	1		6
		1	1	94	49	14	11	108	60	19,754	2 00	39,448			7
4	8 00			7	4			7	4	604	2 50	1,510			8
345	690 00	1		10	6	4	4	14	10	4,173	2 00	8,347			9
				5		2		7		220	1 65	545			10
20	40 00			5	1	1		6	1	625	2 20	1,375			11
		8	8	80	75	21	18	101	93	32,400	2 00	64,800			12
40	78 00			2	2	8	8	6	5	1,600	2 50	4,000			13
				5	1	1	1	6	2	600	2 75	1,875			14
				22	8	1	1	23	9	2,298	1 75	4,000			15
			7	80			25		105	13,647	2 60	35,482			16
1,614	9,508 00	16	16	267	300	114	88	371	288	118,967	1 80	212,234			17
				0	27			6	27	2,604	2 51	6,874			18
		4		60		15		75		8,848	2 50	8,875			19
11	22 30			16	9	2	2	17	11	4,189	1 73	7,117			20
2,480	4,960 00	86	67	1,615	1,010	489	303	2,054	1,315	712,677	1 80	1,280,591			21
60	100 00	15	17	241	215	62	59	308	274	102,216	2 23	229,166	1		22
				12		1		14		1,589	2 28	8,518			23
35,619	71,225 00	160	141	1,248	1,221	463	466	1,710	1,697	899,968	1 53	1,379,986	4	7	24
25	50 00	1		2		1		3		570	1 50	864			25
				7	6	1	1	8	7	1,092	2 50	4,206			26
				6	5	8	8	8	8	4,200	1 60	6,720			27
17	34 00			9	4	2	1	11	6	2,971	2 50	5,028			28
		16	12	230	176	60	53	290	229	126,217	2 01	253,607			29
		23	20	335	294	69	55	404	349	70,118	1 76	125,858			30
		4	4	47	39	12	10	59	49	16,902	1 76	20,661			31
15,894	30,825 00	108	104	1,008	1,082	839	913	1,427	1,845	578,805	1 63	897,786	1	1	32
		87	82	785	670	165	127	950	607	225,485	2 01	454,765	1	1	33
				7	2	7	1	14	8	1,226	1 98	2,428			34
		5	2	66	38	16	9	82	47	21,880	1 75	38,365			35
9,302	19,405 00	81	31	169	161	94	93	263	244	178,571	1 51	262,377		4	36
125,272	\$249,958 75	647	584	8,555	6,848	2,616	2,253	11,171	9,095	4,241,912	\$1 65	\$7,008,078	11	16	

hard to ventilate and expensive to work where the faults are encountered. A number of the mines, however, are productive and successfully operated. The product for the year was 173,571 tons, valued at \$262,377. The mines of the county, their description, locations and condition, are as follows:

CENTRAL COAL AND COKE COMPANY.

This company owns and operates three mines, located a short distance south of Panama, all being connected with the Missouri Pacific railroad by means of switches. The same coal seam is worked by the three mines, each of which is well equipped with machinery and worked on the pillar and room plan, the coal being blasted off the solid.

Mine No. 19 has a shaft 115 feet in depth, the average thickness of the coal being 5 feet. Mine is ventilated by a fan 14 feet in diameter and hoisting is done by steam power. Employment is given to 36 miners and 20 other men at this mine, and the output is shipped to Missouri points.

Mine No. 21, located a mile and a half west of No. 19, is ventilated by a 12-foot fan, hoisting being done by a steam engine. The depth of the shaft is 130 feet and average thickness of coal, 3 feet. This mine employs 101 miners and other men. Product shipped to points in Missouri and Kansas.

Mine No. 23 is located about half a mile west of No. 19 and connected with the Missouri Pacific railroad by a switch track. The mine is entered by a shaft 167 feet deep and is equipped with modern machinery. A fan 16 feet in diameter supplies ventilation, steam power being used in hoisting. This mine was opened up in 1903, and has proved a good producer. It gives employment to 48 miners and 25 others. J. H. Williams is general superintendent; postoffice, Kansas City. A more comprehensive and detailed description of these mines cannot be given for lack of a report of any inspection from the late Mine Inspector.

PHIL W. JONES MINE.

A. S. Brown is the operator of this mine, which is located on the land of Phil W. Jones, near Moundville. Mine is entered by a shaft 26 feet deep and ventilated by natural current. The coal is 28 inches thick and worked on the pillar and room plan; hoisting by horse power. The *product is sold to dealers in local towns.*

PALMER MINE.

This is a strip pit, operated by J. W. Flake, on the Palmer property, four and a half miles east of Harwood; postoffice address of operator, Schell City. The coal is 24 inches in thickness and the product is sold to local consumers.

MEEK & CO.

The above company operate a strip pit near Panama, on the land of N. Ingram. Average thickness of coal, three feet. Output shipped to towns in Missouri and Kansas. Postoffice address of operators is Rich Hill, Mo.

J. L. BROWN.

This strip pit is on the land of Philipp Lyons, near Walker, and is operated by J. L. Brown. Coal averages 20 inches in thickness. The product goes to supply local trade.

J. A. LOWE.

This is a slope opening. Mine located at Sheldon and owned and operated by J. A. Lowe. Worked by hand power; natural ventilation; average thickness of coal vein, 34 inches. Pillar and room plan of operation. Product purchased by local consumers.

D. K. PERKINS.

This mine, which has a slope entrance, is located half a mile west of Moundville, on land of W. A. McAllister, and is operated by D. K. Perkins. Horse power is used in operating and a furnace supplies ventilation. The coal, which averages 28 inches in thickness, is mined on the pillar and room plan and shipped to Nevada and other local towns.

F. M. RADDLE.

Mr. Raddle owns and operates this strip pit, located two miles west of Harwood. The coal has an average thickness of three feet. The output is very limited and is consumed by local purchasers.

SUMMARY—COAL PRODUCT, VALUE MACHINERY,

Office number.....	County	Kind of opening				No. of mines operated in 1904	Kind of power				How ventilated			Plan	
		Shaft.	Slope.	Drift.	Scarp-pl.		Steam.	Horse.	Hand.	Electricity.	Natural.	Purchase.	Fans.	Long-wall.	Room and pillar.
1	Adair	18	7	1		21	17	8	1		1	5	15	2	1
2	Audrain	7				7	4	3			1	2	3		
3	Barton	7	4			18	7	7	4		1	3	5		
4	Bates	8	2			10	4	11	10		1	3	4		
5	Boone	5	5			10	1	4	7		7	3	4		
6	Caldwell	1				1	1						1		
7	Callaway	5				4	3	1	1		1		2		
8	Carroll	1				4	1	1	3		4		1		
9	Casa	1				1							1		
10	Cedar					1			3		3				
11	Charlton	1				1		1	1		2				
12	Clay	1				1							1		
13	Cole	1				1		1			1				
14	Cooper		1			1			1		1				
15	Dade	1	1			2	1	1			2				
16	Grundy	1				2				1			1		
17	Henry	18				16	8	9	3		3		5		
18	Howard		1	1		2	1		1		1				
19	Jackson	1				1	1						1		
20	Johnson	1	1	2		4	1		3		4				
21	Lafayette	24	3	14		41	18	15	7	6	3	18	19	3	
22	Linn	2				2	5	3			3	3	3		
23	Livingston	2				2	2	2			2	3	3		
24	Macon	12	3	4		19	10	4	2	1	3	6	11	4	
25	Monteau	1				1		1			1				
26	Monroe		1	1		2		1	1		2				
27	Morgan	1				1	1				1				
28	Montgomery	2				2		2			1	1			
29	Platte	3				3	8						3		
30	Putnam	2	6	5		15	3	6	3		6	5	2		
31	Rails	3	1	1		5		4	3		2	3			
32	Randolph	11	4	4		20	11	3	3		1	4	11	3	
33	Ray	26	2			32	11	14	6	1	3	17	13	3	
34	St. Clair	1				4		1	3		4				
35	Schuyler	1	1	2		4	1	2	1		1	2	1	1	
36	Vernon	4	2			10	3	3	4		3	1	3		
Total		169				302	117	106	73	9	105	79	108	129	137

EMPLOYES, ETC., BY COUNTIES, 1904.

Powder		No mules work'd.		Employees.						Tons of coal mined.	Av. price received at mines.	Amount received at mines for 1904 output.	Casualties		Office number
Keels.	Cost to miners	Winter.	Summer.	Miners.		Day and outside men.		Total.							
				Winter.	Summer.	Winter.	Summer.	Winter.	Summer.						
28,830	\$77,469 00	85	81	1,173	900	406	400	1,579	1,300	658,558	\$1 54	\$991,475	3	...	1
64	100 00	7	7	148	123	50	40	207	169	42,578	1 94	76,580	...	...	2
11,255	22,465 70	28	25	337	260	121	108	468	377	199,978	1 45	290,300	...	...	3
5,772	11,267 75	14	19	286	123	98	52	378	175	152,495	1 40	212,901	...	2	4
1,154	2,806 00	5	2	96	78	18	15	114	86	35,846	1 82	65,408	...	1	5
...	...	3	2	70	80	10	7	80	87	11,866	2 12	25,140	1	...	6
...	...	1	1	94	49	14	11	108	60	19,754	2 00	39,448	...	...	7
4	8 00	...	...	7	4	...	...	7	4	604	2 50	1,510	...	...	8
345	690 00	1	...	10	6	4	4	14	10	4,178	2 00	8,347	...	...	9
...	...	...	...	5	...	...	...	7	...	880	1 65	645	...	...	10
20	40 00	...	...	5	1	1	...	6	1	625	2 20	1,375	...	...	11
...	...	8	8	80	75	21	18	101	98	32,400	2 00	64,800	...	...	12
40	78 00	...	...	2	2	8	8	5	5	1,600	2 60	4,000	...	...	13
...	...	...	...	5	1	1	1	6	2	500	2 75	1,375	...	...	14
...	...	...	...	22	8	1	1	23	9	2,286	1 75	4,000	...	...	15
...	...	...	7	80	...	...	25	...	105	13,647	2 40	35,492	...	...	16
4,844	9,508 00	16	16	297	200	114	83	371	283	113,087	1 80	212,234	...	...	17
...	...	...	...	6	27	...	...	6	27	2,604	2 51	6,874	...	...	18
...	...	4	...	60	...	15	...	75	...	3,848	2 50	9,875	...	...	19
11	22 80	...	...	15	9	2	2	17	11	4,139	1 72	7,117	...	...	20
2,490	4,980 00	86	57	1,615	1,010	430	305	2,054	1,315	713,677	1 80	1,290,631	...	...	21
60	100 00	15	17	241	315	62	59	308	274	102,306	2 23	229,156	1	...	22
...	...	...	...	13	...	1	...	14	...	1,599	2 28	3,518	...	...	23
35,619	71,225 00	150	141	1,348	1,221	462	465	1,710	1,687	890,908	1 62	1,379,986	4	7	24
25	50 00	1	...	2	...	1	...	3	...	576	1 50	864	...	...	25
...	...	...	...	7	6	1	1	8	7	1,082	2 50	4,206	...	...	26
...	...	...	...	5	5	3	8	8	8	4,300	1 60	6,720	...	...	27
17	34 00	...	...	9	4	2	1	11	5	2,371	2 50	5,928	...	...	28
...	...	16	12	230	176	60	52	280	238	126,217	2 01	253,697	...	...	29
...	...	23	20	336	294	69	55	404	349	70,118	1 79	125,858	...	...	30
...	...	4	4	47	89	12	10	59	49	16,902	1 76	29,651	...	...	31
15,394	30,825 00	108	104	1,096	1,092	339	313	1,487	1,345	578,805	1 63	847,790	1	1	32
...	...	37	33	785	570	166	127	950	697	325,485	2 01	454,765	1	1	33
...	...	...	...	7	2	7	1	14	3	1,229	1 99	2,439	...	...	34
...	...	5	2	66	38	16	9	82	47	21,800	1 75	38,355	...	...	35
9,302	18,405 00	31	31	169	161	94	83	268	244	173,571	1 51	262,877	...	4	36
125,275	\$249,958 75	617	581	8,555	6,848	2,616	2,263	11,171	9,096	4,341,912	\$1 65	\$7,008,078	11	16	...

Table showing, by counties, kind and number of coal mines oper-
for mining and prices received for the coal at the mines, total out-

ADAIR

Office number...	Name of company or mine owner	Name of operator	Days worked	Kind of opening		Depth of shaft	Thickness of coal	Kind of power			How ventilated
				Slope	Drift			Water	Wind	Electricity	
1	Great Northern Fuel Co	Gr. N. Fuel Co. No. 1	284	1		66	8	10	1		14
2	"	"	27	1		88	8	10	1		14
3	"	"	28	1		88	8	10	1		14
4	"	"	31	1		96	8	10	1		14
5	K. C. Mid. C. & M. Co	K. C. M. C. & M. Co. No. 1	165	1		80	8	10	1		12
6	"	"	140	1		150	8	7	1		12
7	Kirksville Coal & C. Co	K. C. & C. Co. No. 1	75	1		90	8	6	1		12
8	Manufacturer's C. & C. Co	M. C. & C. Co. No. 1	251	1		88	8	9	1		10
9	"	"	244	1		8	10	1			12
10	"	"	242	1		8	11	1			12
11	"	"	254	1		8	10	1			1
12	"	"	237	1		88	8	10	1		14
13	"	"	241	1		88	8	10	1		14
14	Miley, J. H., Land	John Lee	106	1		8	8		1		1
15	Oak Block Coal Co	J. M. Bedford	216	1		8	4		1		1
16	Paris, John	John Paris	120	1		8	11		1		1
17	Rombauer Coal Co	R. C. Co., Mines 2 & 3	216	2		72	8	4	2		12
18	Scott, D. C.	D. C. Scott	125	1		4			1		1
19	Short Run Coal Co.	Sheridan Coal Co	221	1		85	2	3	1		15
20	Stahl Coal Co	Stahl Coal Co	102	1		124	3	6	1		1
			3,348	13	7			17	8	1	1 5 1

AUDRAIN

1	Audrain Coal Co	Audrain Coal Co.	290	1		80	2	6	1		1
2	Byan, Wm.	Wm. Byan	96	1		85	2	6	1		1
3	Hofner, O. F.	S. C. Clutter	102	1		85	2	6	1		1
4	Krieger Coal Co	Julius Krieger	285	1		146	2	8	1		12
5	Mississippi Glass Co	Mississippi Glass Co	280	1		65	2	4	1		12
6	Standard Coal & M. Co.	Standard C. & M. Co	300	1		60	2	2	1		1
7	Vandalln Furber Coal Co.	Lawder-Peterson C. Co.	250	1		105	2	4	1		4
			1,563	7				4	3		1 3 4

BARTON

1	Campbell, James	C. Durham	95	1		2	2		1	1	1
2	Curless, W. H.	Geo. Mellor	50	1		2	2		1	1	1
3	Haber Bros	Pittsburgh Coal Co.	110	1		35	2	4	1		1
4	Konantz, W. D.	Haynes Coal Co	180	1		2	2		1		1
5	Lavery, W. J. & A. G.	Lavery Coal Co.	202	1		2	4		1		1
6	Patterson, W. W.	W. W. Patterson	240	1		8			1		1
7	Richards, Louisa	C. A. Richards	60	1		2	8		1		1
8	Sandhager	Short & McKenzie	204	1		3	4		1		1
9	Scherrard, Florence	G. W. Goodwin	185	1		2	4		1		1
10	Spear, M. M.	M. M. Spear	125	1		1	2		1		1
11	Travis, Jos.	Jos. Travis	150	1		30	2	3		1	1
12	Walser, G. H.	Walser & Yoke	100	1		2	4		1		1
13	Weir Coal Co	Weir Coal Co No. 10	107	1		88	3		1		12
14	"	" No. 14	140	1		24	3		1		10
15	"	" No. 15	230	1		45	3		1		1
16	"	" No. 18	1	1		45	3		1		12
17	Western Coal & M. Co.	Western Coal & M. Co	200	1		98	3		1		16
18	"	Hall & Fletcher	235	1		36	3		1		10
			2,838	7	4	7			7	7	4 10 6

*d, working plan, kind of plant, number of employes, prices paid
t and total receipts from the sale of the product for the year 1904.*

UNTY.

Powder.		Mules.	Employees						Price paid for mining.		Tons of coal mined...	Price received per ton at mine...	Total amount received for output, 1904.....	Office number.
Kegs.....	Cost.....		Miners.		Others		Total.		Winter.....	Summer....				
		Summer Winter.....	Winter.....	Summer....	Winter...	Summer	Winter..	Summer....						
2,325	\$4,650 00	2 2	30	50	18	17	48	67	72	72	48,251	\$1 85	\$68,526	1
40	80 00		8	2	2	10	72	72	72	72	500	1 30	650	2
146	292 00		15	9	11	24	72	72	72	72	2,129	1 30	2,767	3
130	240 00		17	10	27	27	72	72	72	72	2,200	1 30	2,800	4
2,000	6,000 00	7 7	75	75	25	35	100	100	74	74	40,000	1 20	55,000	5
5,000	10,000 00	12 12	150	150	40	40	190	190	72	72	60,000	1 39	82,400	6
100	200 00	1 1	8	10	4	12	72	72	72	72	2,222	1 30	4,000	7
3,330	6,678 00	7 4	80	65	40	35	120	100	72	72	59,862	1 50	88,793	8
1,061	3,322 00	6 4	58	40	18	14	71	54	72	72	32,108	1 50	48,155	9
2,251	4,502 00	5 4	60	45	26	23	86	68	72	72	39,923	1 50	59,884	10
826	1,652 00	2 1	30	23	15	12	51	35	72	72	11,982	1 50	17,973	11
3,199	6,398 00	7 5	115	88	81	28	148	110	72	72	62,101	1 50	93,162	12
3,892	6,784 00	6 4	70	63	25	22	95	84	72	72	57,870	1 50	86,805	13
63	126 00	1	8	2	5	5	72	72	72	72	1,262	1 75	2,268	14
14	25 00	5 2	65	20	12	30	77	60	75	95	13,508	2 00	27,230	15
7,440	14,880 00	8 8	300	200	60	60	260	200	72	72	108,042	1 50	167,060	17
20	40 00		8	4	4	2	12	6	1 00	1 00	1,800	1 75	3,150	18
6,000	12,000 00	11 12	112	108	54	59	166	167	72	72	102,107	1 55	168,306	19
		4 4	65	40	15	10	80	50	95	95	16,196	1 75	28,842	20
38,936	\$77,899 00	85 81	1,173	990	405	400	1,578	1,390			668,568	\$1 54	\$991,475..	

UNTY.

			20	5	20	5	40	10	\$1 02	\$1 02	9,308	\$1 75	\$16,299	1
			4	2	1	1	5	8	1 37	1 37	600	2 00	1,200	2
			4		1		5	1	25	1 25	600	2 25	900	3
50	\$100 00	1 1	12		4		17	17	1 02	1 02	3,840	2 18	8,177	4
		1 1	12	12	1	1	13	13	1 40	1 40	4,450	1 75	7,788	5
			20	16	7	4	27	20	1 02	1 02	6,000	2 00	12,000	6
		5. 5	75	75	25	25	100	100	1 02	1 02	17,780	1 70	30,226	7
50	\$100 00	7 7	148	128	59	40	207	163	...	...	42,578	\$1 94	\$76,590	.

UNTY.

			2			2		\$1 00	\$1 00	160	\$1 50	\$240	1
			2	2		2	2	80	80	224	1 75	392	2
50	\$100 00		10	4		14		72		150	1 50	225	3
125	270 00	2 2	12	10	5	16	18	72	72	4,000	1 30	5,600	4
175	815 00		10	12	6	15	18			10,000	1 30	11,000	5
120	240 00		12	8		12	8			4,800	1 30	6,200	6
			2	2		2	2			253	1 75	443	7
245	490 00			8	6	8	6			1,800	1 85	2,400	8
80	150 00	1 1	12	10	2	14	12	75	77	3,240	1 00	3,240	9
				8			8			168	1 87	315	10
1			3	1		8	1			280	1 50	420	11
15	27 75			10	10	10	10			5,600	1 25	6,875	12
4,285	8,570 00	12 10	96	87	40	35	135	122	72 72	66,519	1 48	98,448	13
626	1,252 00	2 2	40	32	30	18	60	50	72 72	12,419	1 48	18,189	14
730	1,460 00		12	12	4	4	16	16	72 72	9,502	1 48	14,062	15
													16
3,764	7,528 00	8 8	95	60	18	18	113	78	72 72	61,458	1 25	79,115	17
1,040	2,080 00	8 8	30	20	0	0	35	30	72 72	20,000	1 20	24,000	18
11,265	\$22,465 75	23 25	387	300	131	108	458	377	....	199,973	\$1 45	\$270,800	..

STATISTICS OF

BATES

Office number	Name of company or mine owner.	Name of operator.	Days worked.	Kind of opening		Depth of shaft.	Thickness of coal.	Kind of power.		How ventilated.
				Adit.	Shaft.			Water.	Electricity.	
1	Ackerman & Co., J. T.	J. T. Ackerman.	60	1		10	1	1		1
2	Amsterdam Coal Co.	Amsterdam Coal Co.	85	1		10	1	1		1
3	Engels, L. G.	J. T. Engels.	25	1		8	1	1		1
4	Ferguson, C. E.	C. E. Ferguson.	30	1		3	1	1		1
5	Fleming Coal Co.	Fleming Coal Co.	20	1		3	6	1		1
6	Geo. J. A.	J. A. Geo.	20	1		3	6	1		1
7	Harris, Sarah J.	K. & W. Coal & M. Co.	75	1		3	3	1		1
8	Heck & Jones.	Heck & Jones.	58	1		3	3	1		1
9	Holland Coal Co.	Holland Coal Co.	30	1		3	2	1		1
10	Lowden, W. H.	Tarves & Duly	60	1		4	6	1		1
11		W. H. Lowden.	60	1		5	6	1		1
12	McComb, David.	David McComb.	60	1		5	6	1		1
13	New Home Coal Co.	New Home Coal Co.	132	1		3	6	1		1
14	Peeler, D. D.	D. D. Peeler.	270	1		4	10	1		1
15	Putnam Bros.	Putnam Bros.	25	1		3	1	1		1
16	Rees Coal Co.	Rees Coal Co.	140	1		3	1	1		1
17	Rich Hill Coal Mining Co.	Rich Hill C. M. Co.	198	1		10	2	1		1
18	Schmedding, B.	Robert Sutherland.	60	1		1	6	1		1
19	Shaw, C. A.	J. A. Harris.	150	1		2	6	1		1
20	Spencer Bros.	Spencer Bros.	200	1		3	6	1		1
21	Walnut Hill Mine	Selders Bros.	100	1		3	4	1		1
22	Walnut Land & Coal Co.	D. H. Arbogast.	100	1		3	1	1		1
23	Wheatley, Wm.	Pearson & Watson	185	1		3	1	1		1
			3,079	8	2	513		4	11	19

BOONE

1	Banner Coal Co.	Banner Coal Co.	360	1		15	3	6	1	1
2	Bensley, W. H.	John Gasset.	60	1		3	6	1	1	1
3	Columbia Coal & M. Co.	R. E. Henry.	225	1		13	3	6	1	1
4	Davis, I. R.	I. R. Davis.	25	1		3	6	1	1	1
5	Keen, J. H.	J. H. Keen.	220	1		12	3	10	1	1
6	Prather Coal Co.	W. R. Prather.	220	1		6	3	6	1	1
7	Stidham, W. A.	W. A. Stidham.	15	1		3	10	1	1	1
8	Sutton, W. C.	W. C. Sutton.	270	1		3	6	1	1	1
9	White, Wm.	Marion R. White.	150	1		3	10	1	1	1
10	White, J. H.	J. H. White.	180	1		3	10	1	1	1
			1,620	3	3	1	1	1	4	7

CALLAWAY

1	Castle, Wm.	Wm. Castle.	100	1		2	2	1	1	1
2	Fulton Fire Brick Co.	Fulton F. B. Co.	250	1		13	3	5	1	1
3	Harris, John	John Harris.	300	1		10	2	10	1	1
4	Stekles, Luther	J. F. Reed.	200	1		12	3	6	1	1
5	Stimmons, Geo. W.	Geo. W. Stimmons.	200	1		5	3	5	1	1
6	Smith, James.	James Smith.	120	1		6	3	4	1	1
			1,270	3	1		2	3	1	1

CALDWELL

1	Co.	Caldwell Coal Co.	200	1		3	2	1	1	1
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COAL MINES—Continued.

COUNTY.

Pillar and room. Long-wall.	Powder		Mules. Summer. Winter.	Employees.				Price paid for mining.		Tons of coal mined	Price received per ton at mine.	Total amount received for output, 194	Office number.
	Kegs.	Cost		Miners.		Others.		Total.					
				Winter.	Summer.	Winter.	Summer.	Winter.	Summer.				
1	100	\$190 00		15		7		22	\$ 72	400	\$1 75	\$700	1
1	275	481 25	1	7	5	2	1	9	6 70	1,990	1 98	2,690	2
	20	48 75				7		7		6,457	1 75	11,300	3
										800	1 75	1,050	4
1	180	815 00		7	7	10	6	10	5	5,000	1 50	7,500	5
1	75	150 00		20		3	1	8	1 10	5,675	1 80	10,215	6
						5		22	72	780	1 40	1,092	7
1	12	24 00		5		5		5	72	850	1 75	1,487	8
1	20	60 00		2	2	1	1	7		200	1 85	370	9
1	35	57 75		4		2		6	77	650	1 65	1,072	10
1				8				6	77	950	1 60	1,520	11
1	2,200	4,599 00	8	100		20		6	70	2,500	1 50	3,750	12
1	20	40 00	8	8	9			3	9	51,919	1 35	70,090	13
1	3	6 00		8				3	70	4,050	1 75	7,087	14
1	200	400 00	1	8	5	12	20	8		50	1 75	87	15
1	1,175	2,352 00	7	61	61			61	62	10,000	1 15	11,500	16
	4	7 00				2	2	2		26,854	1 08	30,199	17
				1	1	4	4	5		120	2 00	240	18
	200	630 00				5	8	6		2,383	2 00	4,566	19
	15	28 00	1	4		2		6		4,475	1 62	7,250	20
1	155	273 00		7	2	3	1	10	8	485	1 53	744	21
	808	1,618 00	8	81	81	8	8	84	82	2,002	1 60	3,204	22
15	5,772	\$11,237 75	14	286	128	92	62	378	175	24,204	1 41	\$212,801	..

COUNTY.

1	500	\$600 00		15	15			15	15	8,375	\$1 75	\$14,655	1
1	6	12 00		2	1			3	1	400	1 50	600	2
1	225	450 00		25	15	7	7	22	1 01	9,000	2 00	18,000	3
1	10	20 00		8	8	2	2	5	5	200	1 25	250	4
1	200	400 00	2	10	10	4	2	20	12	7,000	1 75	12,250	5
1	300	600 00	4	12	8	4	1	16	4	6,187	1 75	9,077	6
1					15		1	16		25	1 25	32	7
1	100	200 00		4	9			9	9	4,050	2 00	8,100	8
1	12	24 00		7	2			7	2	800	1 50	1,200	9
1				7		1		8	1	720	1 50	1,080	10
7	1,158	\$2,306 00	6	95	78	18	18	114	86	35,865	\$1 82	\$65,408	..

COUNTY.

1				5	2	1	1	6	3	\$1 50	\$1 50	585	\$3 00	\$1,772	1
1			1	60	30	4	4	54	34	1 25	1 25	8,000	2 00	16,000	2
1				22	10	4	8	26	13	1 25	1 25	4,270	1 88	8,000	3
1				3	2	1		4	2	1 25	1 25	900	2 50	2,400	4
1				8	5	2	1	10	6	1 25	1 25	3,253	2 00	6,506	5
1				6		2	2	8	2	1 25	1 25	2,025	2 00	5,870	6
6			1	94	49	14	11	108	60			19,754	\$2 00	\$39,448	..

COUNTY.

1			3	2	70	80	10	7	80	37	\$1 25	\$1 13	11,800	\$2 12	\$25,140	1
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STATISTICS OF CARROLL

Office number.	Name of company or mine owner	Name of operator	Days worked.	Kind of opening			Depth of shaft.	Thickness of coal, feet.	Kind of power		How ventilated
				Shaft.	Blow.	Adit-pit.			Hand Horse Steam.	Electricity.	
1	Anwarter, H. D.	H. D. Anwarter	80	1			1	8	1		1
2	Colbert, A. M.	J. F. Lower	75	1			1	6	1		1
3	Hughes, Wm	Wm Hughes	90	1			1	10	1		1
4	Ogle, W. F.	W. F. Ogle	80	1			12	1	6		1
			225	1					1	8	4

CHARITON

1	Kahler, W. J.	W. J. Kahler	40			1	1	6	1		1
2	Tillison, Joe	J. W. Twigg	45	1			67	8	6	1	1
			85	1		1			1	1	2

CASS

1	Colonial Investment Co	Carter & Andrews	300	1			163	2	10	1	10
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CEDAR

1	Duncan, J. C.	J. C. Duncan	30		1		2		1		1
2	Pougin, G. M.	G. M. Pougin	25		1		2	2	1		1
3	Schroeder, C. M.	C. M. Schroeder	50		1		1	8	1		1
			105		3				3		3

CLAY

1	Missouri City Coal Co	Missouri City Coal Co	214	1			156	1	10	1	12
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COLE

1	Elston, Geo	Geo Elston	150	1			115	12	1		1
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COOPER

1	Hazell Springs Coal Co	Chas W Hazell	100	1			1	6	1		1
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DADE

1	McElhinney, R. H.	Finney & Taylor	180	1			82	2	2	1	1
2	McCluey, R. M.	R. M. McCluey	160	1			2	5	1		1
			280	1	1			1	1		2

MINES—Continued.

TY.

Office number	Total amount received for output, 1904.....	Price received per ton at mine.	Tons of coal mined...	Price paid for mining.		Employees			Mules	Powder.
				Summer....	Winter....	Total.	Others.	Miners.		
				Summer....	Winter....	Summer ..	Winter..	Summer	Summer, Winter...	
1	\$150	\$2 50	60	\$1 75	\$1 50	1	2	1	1	4
2	360	2 50	144			2	1	1	2	4
3	600	2 50	240			2	1	1	1	4
4	450	2 50	180			1	1	1	1	4
	\$1,510	\$2 50	604			7	4	7	7	4

TY.

20	\$10 00		1	1	1	1			125	\$2 00	\$250	1
20	\$40 00		4	1	5	1	\$1 25		600	2 25	1,125	2
20	\$40 00		5	1	6	1			625	\$2 20	\$1,375	

TY.

345	\$900 00	1	10	6	4	4	14	10	\$ 85	\$ 75	4,173	\$2 00	\$8,347	1
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TY.

			2				2		80	\$1 50	\$120	1
			2				2		50	1 50	75	2
			1		2		3		200	1 75	350	3
			5		2		7		380	\$1 65	\$627	

TY.

		3	3	80	75	21	18	101	95	\$1 11	\$1 11	32,400	\$2 00	\$64,800	1
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TY.

40	\$78 00		2	2	3	3	5	5	\$ 75	\$ 75	1,000	\$2 50	\$4,000	1
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TY.

			5	1	1	1	6	2	\$2 00	\$1 75	500	\$2 75	\$1,375	1
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TY.

			8	5	1	1	9	6	\$1 00	\$1 00	1,000	\$1 75	\$2,000	1
			14	8			14	8	1 00	1 00	686	1 75	1,200	2
			22	8	1	1	23	9			2,286	\$1 75	\$4,000	

STATISTICS OF
GRUNDY

Office number	Name of company or mine owner	Name of operator	Days worked	Kind of opening		Depth of shaft	Thickness of coal, feet	Kind of power			How ventilated
				Shaft	Stair-pit			Steam	Hydraulic	Electricity	
1	Grundy County Coal Co.	Grundy County C. Co.	162	1		310	1 6			1	1

HENRY

1	Bowen Bros.	Bowen Bros., 1, 2 & 3	175	2		70	6	1			1 1/2
2	Coon Creek Coal Co.	Coon Creek Coal Co.	270		1		2 10				
3	Cooper Creek Coal Co.	Cooper Creek Coal Co.	180	1		35	2				12
4	Dennison, H. T.	H. T. Denmarce	244	1		20	2 6	1			1
5	Dickey Clay Mfg. Co.	Dickey Clay Mfg. Co.	235	1		24	2 10	1			10
6	Engelman, Chas.	Win. Zimmerman	275		1		2 2		1		1
7	Hamilton, Henry E.	Payton & Kennedy	229	1		32	2 2		1		1
8	Hughes, W. E.	W. E. Hughes	203	1		23	4 10		1		1
9	Hurst, John	John Hurst	210	1		50	2		1		1
10	Jordan Coal & Coke Co.	J. C. & C. Co., 5 & 6	162	2		55	2 8		1		10
11	Pigg, D. B.	D. B. Pigg	200		1		2 6		1		1
12	Reed, Wm.	Wm. Reed	102	1		25	10		1		1
13	Rusk, Wm.	Edward Robinson	200	1		20	10		1		1
			2,802	13	1 2			2 9 3			7 1

HOWARD

1	Hamilton & Grant	Hamilton & Grant	40	1			3 8	1			1
2	Morrison Heirs, A.	R. S. Jackson	275		1		1 6			1	1
			315	1 1				1		1	2

JACKSON

1	Brush Creek C. & M. Co.	B. C. Coal & M. Co.	8	1		30	1 8	1			1
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JOHNSON

1	Cazzell, J. C.	J. C. Cazzell	35		1		2 8		1		1
2	Christopher, J. H.	J. H. Christopher	35		1		2 6		1		1
3	Markurd, Isaac	D. A. Bullock	200		1		1 8		1		1
4	Rosenthal, H.	M. B. Melly	200	1		24	1 10	1			1
			470	1 1 2					1	3	4

.L MINES—Continued.

JNTY.

Powder.		Mules..		Employees.						Price paid for mining.		Tons of coal mined...	Price received per ton at mine.....	Total amount received for output 1904.....	Office number
Kegs.....	Cost.....	Winter.....	Summer.....	Miners.		Others.		Total.		Winter.....	Summer.....				
.....	7	7	.....	80	.....	26	.....	106	.....	\$1 85	18,647	\$2 60	\$35,482	1

JNTY.

1,800	\$3,600 00	8	8	65	65	20	20	85	85	\$ 67	\$ 67	34,259	\$1 75	\$59,958	1
400	620 00	.....	.....	.....	.....	22	12	22	12	.....	.....	7,331	1 56	11,486	2
194	388 00	1	1	15	15	4	4	19	19	1 11	1 11	6,012	2 25	18,527	3
400	800 00	1	1	15	15	4	4	19	19	1 11	1 11	4,744	2 13	10,106	4
750	1,500 00	4	4	28	28	10	10	38	38	97	97	18,582	1 75	23,768	5
2	4 00	4	4	2	2	.....	.....	2	2	.....	.....	487	2 00	975	6
.....	.....	.....	.....	16	16	8	8	19	19	1 11	1 11	6,197	2 00	12,398	7
.....	.....	.....	.....	10	4	1	1	11	5	75	75	10,802	1 75	18,908	8
900	1,800 00	1	1	50	80	9	6	59	86	1 11	1 11	19,500	2 00	39,000	9
297	594 00	1	1	20	.....	7	.....	27	.....	1 11	1 11	2,804	2 18	6,118	10
.....	.....	1	1	24	15	30	20	54	35	.....	.....	5,000	1 75	8,750	11
101	202 00	.....	.....	10	8	4	8	14	11	1 11	1 11	1,809	2 20	2,880	12
.....	.....	.....	.....	4	4	.....	.....	4	4	1 00	1 00	1,960	1 75	8,430	13
4,844	\$9,508 00	16	16	257	200	114	88	371	283	.....	.....	118,987	\$1 80	\$212,234	..

UNTY.

.....	.....	.....	.....	.....	24	.....	.....	.....	24	\$1 01	\$1 01	2,000	\$2 50	\$5,000	1
.....	6	8	6	8	1 62	1 50	694	2 70	1,874	2
.....	6	27	6	27	2,604	\$2 51	\$6,874	..

JNTY.

.....	4	60	15	75	\$1 16	3,848	\$2 50	\$8,875	1
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JNTY.

8	\$6 80	1	1	\$1 25	45	\$1 75	\$79	1
.....	2	1	2	1	110	2 00	220	2
8	16 00	6	6	6	6	1 00	\$1 00	3,142	1 50	4,713	3
.....	.....	.....	.....	6	2	2	2	8	4	1 50	1 50	842	2 50	2,105	4
11	\$22 80	.....	.....	15	9	2	2	17	11	.....	.....	4,139	\$1 72	\$7,117	..

STATISTICS OF

LAFAYETTE

Office number.

Office number.	Name of company or mine owner	Name of operator	Days worked.....	Kind of opening			Depth of shaft.....	Thickness of coal.....	Kind of power	How ventilated			
				Shaft	Slope	Stair-pit							
1	Bartels, Martin..	Martin Bartels.	334	1			2	1	1				
2	Hell & Greer..	W. M. Greer..	300		1		1	6	1				
3	Brandan S. W. & J. B.	S. W. & J. B. Brandan	300	1			71	1	1	8			
4	Cary, H. F..	H. F. Cary ..	125	1			130	1		4			
5	Chamberlin, J. A. R..	N. F. Wilson..	75		1			1	1				
6	Con. Farmers' Coal Co.	Consolidated F. C. Co. No. 1	300	1			50	1		10			
			300	1			30	1		10			
7	Diamond Coal Co.	Diamond Coal Co.	133	1			56	1		7			
8	Dover Coal Co.	Dover Coal Co.	300		1		2	1		1			
9	Edwards, J. A.	J. A. Edwards	300	1			40	1		4			
10	Farmers' Coal Co.	Farmers' Coal Co.	212	1			48	1		8			
11	Freking, H. F.	Peter Mueller	100		1			1	1	1			
12	Gaffin, O. M.	O. M. Gaffin	50		1			1	1	10			
13	Gates, Stephen	Independence C. M. Co.	160	1			47	1	1	5			
14	Gersendorfer, S. F.	S. F. Gersendorfer	104		1			1		1			
15	Hoffmann, E. J.	E. J. Hoffmann	140	1			32	1	1	1			
16	Hohenvald Bros.	Hohenvald Bros.	228	1			30	1	1	1			
17	Kierstead Coal Co.	Kierstead Coal Co.	157	1			90	1	1	6			
18	Kratz & Son..	Kratz & Son ..	212	1			16	1	1	1			
19	Kresse, A. F.	A. F. Kresse..	35		1			1		1			
20	Labor Exchange	Labor Ex., Branch No. 36.	205	1			106	1	1	1			
21	Lanning Harris C. & G. Co.	L. H. C. & G. Co.	250		1			1	1	1			
22	Lexington Block Coal Co.	Lexington B. C. Co.	246	1			110	1	1	10			
23	Lewis, J. H.	Frank George.	227	1			75	1	1	10			
24	Macey Estate, Henry	E. Macey Van Guilder	150		1			1	1	1			
25	McGrew, J. C.	J. C. McGrew	237		1			1	1	1			
26	Ople, Mitchell, Jones & White	Ople & Mitchell.	100	1			125	3	8	4			
27	Perry, Thos..	Thos. Perry..	90		1			1	4	1			
28	Plattenburg & Son, John	Sipe & Gaffin.	111	1			28	1	6	1			
29	Plattenburg & Co.	Stranneke & Atwood	235		1			1	6	1			
30	Rosewell, Jas..	Jas. Rosewell	240	1			75	1	8	1			
31	Schoelling, S. A.	Will North	225		1			1	8	1			
32	Summers, M. W.	M. W. Summers..	240		1		2	1		1			
33	Walton Thos.	Thos. Walton	240		1			1	8	1			
34	Waverly Coal & M. Co.	Waverly C. & M. Co.	270	1			110	4	1	16			
35	Wessel, Sanderbank & Stoecker	F. Stoecker	40	1			30	1	10	1			
36	Western Coal & M. Co.	W. C. & M. Co. Summit M.	275	1			158	1	10	12			
37		Midway M.	284	1			138	1	10	12			
38		Valley M.	295	1			87	1	10	12			
39		Glen Oak M.	249	1			43	2	1	10			
40		Senwell M..	301		1			1	9	1			
			7,946	24	8	14		18	15	7	6	18	18

LIVINGSTON

1	Cox, J. C.	W. L. Cox & Bro.	110	1			84	1	6	1	1	1
2	Garble, C. W.	J. E. Dusenberry.	100	1			47	1	4	1	1	1
			210	2					2		2	

MINES—Continued.

TY.

Powder.	Mules.	Employees.			Price paid for mining.	Tons of coal mined...	Price received per ton at mine...	Total amount received for output, 1904.....	Office number.....
		Miners.	Others.	Total.					
Kegs	Cost.	Summer	Winter	Summer	Winter	Summer	Winter		
.....	1	4	2	4	\$1 50	\$1 50	\$900	1
.....	2	30	10	25	1 87	1 87	6,700	2
.....	2	30	10	38	1 25	1 25	6,970	3
.....	2	35	18	41	1 25	1 25	9,728	4
.....	3	40	2	4	1 50	1 25	400	5
.....	3	40	34	46	1 11	1 11	16,000	6
.....	3	45	34	40	1 11	1 11	16,000	7
.....	3	48	133	133	1 11	1 11	37,674	8
.....	3	40	32	44	1 34	1 34	5,148	9
.....	1	80	34	34	1 20	1 20	4,466	10
.....	10	75	16	147	1 11	1 11	82,000	11
.....	2	8	3	3	1 15	1 15	120	12
.....	2	37	42	42	1 15	1 15	2,300	13
.....	2	25	35	35	1 11	1 11	6,882	14
.....	2	4	4	4	1 62	1 62	750	15
.....	2	8	9	9	1 25	1 12	1,660	16
.....	2	4	5	5	1 25	1 25	1,420	17
.....	2	20	22	20	1 11	1 11	8,668	18
.....	2	2	2	2	1 80	1 80	460	19
.....	2	2	2	2	1 75	1 75	100	20
.....	5	68	72	64	1 45	1 85	21,990	21
.....	5	80	92	80	1 11	1 11	12,000	22
.....	3	80	78	42	1 20	1 20	15,815	23
.....	3	35	41	24	1 20	1 20	7,195	24
.....	2	22	29	1	1 11	1 11	4,180	25
.....	220	50	20	250	70	70	66,211	26
20	\$40 00	.....	.....	1	1	.....	.....	500	27
.....	2	1	2	1	1 60	1 50	180	28
.....	5	5	5	5	1 37	1 37	966	29
.....	14	6	14	6	1 37	1 37	4,016	30
.....	5	5	5	5	1 02	1 02	2,806	31
.....	8	2	10	2	1 26	1 00	2,320	32
.....	10	4	12	5	1 25	1 25	8,600	33
.....	3	8	3	8	1 37	1 37	1,260	34
2,400	4,920 00	80	70	88	76	70	70	61,707	35
.....	5	1	6	1	1 25	1 25	188	36
.....	4	72	38	110	76	75	69,702	37
.....	6	105	69	173	76	75	98,919	38
.....	7	104	60	164	76	75	101,274	39
.....	8	180	25	165	1 20	1 19	65,800	40
.....	4	61	9	70	1 20	1 19	26,770	41
2,480	\$4,960 00	80	57	439	305	2,064	1,315	713,677	\$1 80
		1,615	1,010					\$1,290,581	

TY.

.....	.....	10	1	11	\$1 25	1,380	\$2 25	\$3,013	1
.....	.....	8	.....	2	1 75	200	2 50	500	2
.....	.....	13	1	14	.....	1,530	\$2 25	\$3,513	..

STATISTICS OF

LINN

Office number	Name of company or mine owner	Name of operator	Days worked	Kind of opening	Depth of shaft	Thickness of coal, feet	Kind of power	How ventilated
1	Brookfield Paving H Co	Brookfield P H Co...	287	1	166	2 4	1	1
2	Burdall, H D	Burdall & Johnson,	246	1	140	2 2	1	1
3	Landrith, S W	Landrith Coal Co.	198	1	18	2 4	1	1
4	Marcelline Coal Co	Marcelline Coal Co..	290	1	185	2 4	1	1
5	Marcelline Fuel Co	Marcelline Fuel Co..	240	1	206	2 2	1	1
6	Rowell, Herbert J	Herbert J Rowell.	195	1	150	2 2	1	1
7	Williams, L R	L R Williams	29	1	155	2 2	1	1
8	Wine, H C	H C Wine	155	1	150	2 4	1	1
			1,508	8			8 8	8 8

MACON
MORGAN

1	Bevier Coal & Mining Co.	Bevier C. & M. Co.	271	1		4 6	1	1
2	Central Coal & Coke Co.	C. C. & C. Co., No. 10	207	1	187	2 10	1	1
3	"	"	12	1	83	4	1	1
4	"	"	21	1	110	4 6	1	1
5	"	"	25	45		4 8	1	1
6	"	"	52	39		3 8	1	1
7	"	"	61	217	1	124	4 3	1
8	"	"	66	201	1	57	4 3	1
9	"	"	70	74	1	4 4	1	1
10	Dennis, J H	J. H. Dennis,	60	1	60	2	1	1
11	Garnett, B F.	B F Garnett,	155	1	35	2	1	1
12	Helmet Mining Co	Helmet Mining Co.	271	1	180	3 6	1	1
13	Holtzclaw & Hurd	Holtzclaw & Hurd	150	1	90	3	1	1
14	James, Mrs. Levi	James Bros.,	225	1	54	4 4	1	1
15	McCullough, J L	J L McCullough	60	1	38	3	1	1
16	Northwestern C. & M. Co.	N W C & M Co	236	1	140	4 6	1	1
17	Schlimer, John	Adkisson & Kasey	86	1	4	8	1	1
18	Thomas, Rowland	Rowland Thomas	185	1	180	4	1	1
19	Vestid, Thomas	Gov. Willide	30	1		4 6	1	1
			2,928	12	3,4		10 6 2	1,3 6 11

MONROE

1	Montgomery, W J.	W J Montgomery	220	1	110	1	1	1
2	Redding, H.	H. Redding.	125	1	1 6	1	1	1
			345	1	1	1	1	2

MONTGOMERY

1	Hays, F	F Hays	200	1	60	2 6	1	1
2	Whitehead, J H.	Whitehead Sons.,	110	1	20	2 6	1	1
			310	2			2	1 1

MONTICAU

1	Keller, O. B.	O. B. Keller.	30	1	30	2	1	1
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J. MINES—Continued.

NTY.

Powder.	Mules.	Employees						Price paid for mining.		Tons of coal mined...	Price received per ton at mine.....	Total amount received for output, 1904	Office number.	
		Miners.		Others.		Total		Summer....	Winter...					
		Summer.	Winter	Summer....	Winter....	Summer....	Winter....							
Cost.....	Summer Winter		10	10	4	4	14	14	\$1 87 1/2	\$1 87 1/2	2,050	\$2 75	87,812	1
			10	2	1	1	11	8	1 50	1 50	2,245	2 75	6,178	2
60	\$100 00	1 1	12	6	2	1	14	7	1 82 1/2	1 82 1/2	2,105	2 75	5,780	3
		12 12	127	127	35	35	162	162	1 22 1/2	1 22 1/2	60,568	2 16	180,221	4
		6 4	54	58	12	12	70	70	1 22 1/2	1 22 1/2	27,840	2 20	61,248	5
			15	10	7	5	22	15	1 90	1 80	4,578	2 75	12,600	6
			2				2		1 50		110	2 75	303	7
			7	2	1	1	8	8	1 50	1 50	3,100	2 62 1/2	5,507	8
50	\$100 00	18 17	341	215	62	59	808	274	....	..	102,306	\$2 28	\$220,156	.

NTY.

2,600	55,880 00	8	8	60	60	35	35	105	105	1 67	1 67	60,880	\$1 58	\$106,740	1
3,492	6,984 00	14	14	100	100	38	38	138	138	1 67	1 67	82,203	1 50	123,808	2
1,800	2,792 00	15	15	78	78	37	37	110	110	1 67	1 67	85,581	1 50	58,872	3
6,202	12,404 00	...	...	147	147	52	52	199	199	1 67	1 67	124,242	1 50	186,308	4
150	300 00	1	1	13	13	9	9	22	22	1 67	1 67	4,228	1 50	6,342	5
150	300 00	5	5	23	23	11	11	34	34	1 67	1 67	2,800	1 50	4,300	6
7,781	15,562 00	35	35	235	235	87	87	322	322	1 67	1 67	189,433	1 50	281,150	7
5,458	10,916 00	24	24	180	180	64	64	244	244	1 67	1 67	126,461	1 50	308,191	8
677	1,354 00	13	13	37	37	19	19	50	50	1 67	1 67	12,986	1 50	19,479	9
...	...	...	...	12	6	1	1	13	6	1 60	1 25	1,800	2 00	3,600	10
...	...	...	...	6	4	1	1	7	5	1 50	1 25	3,000	2 00	6,000	11
...	...	6	6	75	75	25	25	100	100	1 65 1/2	1 65 1/2	43,182	1 60	67,410	12
250	500 00	...	...	19	19	8	8	27	27	1 12	1 12	6,000	1 75	10,500	13
50	100 00	1	1	4	4	2	2	6	6	1 00	1 00	2,700	2 00	5,400	14
20	40 00	...	...	3	...	1	...	4	...	1 00	...	700	1 50	1,185	15
7,179	14,358 00	38	38	249	244	74	82	326	326	1 67	1 67	183,469	1 50	292,781	16
10	17 00	...	...	2	...	...	...	2	...	1 00	...	316	1 87 1/2	436	17
87	164 00	1	1	6	2	...	...	8	2	1 00	...	2,190	2 00	4,880	18
27	54 00	1	...	4	...	1	...	5	...	1 00	...	800	1 50	1,200	19
85,619	\$71,225 00	150	141	1,248	1,221	462	466	1,710	1,687	...	...	899,968	\$1 58	\$1,379,086	...

NTY.

				4	3	1	1	5	4	1 50	1 87 1/2	1,120 2 25	\$2,520 1
				3	3			3	3	1 50		562 3 00	1,080 2
				7	6	1	1	8	7			1,082 2 50	\$4,376 ..

NTY.

12	\$24 00			4	4	1	1	6	5	1 50	1 50	1,200 2 50	\$3,000 1
5	10 00			5				5		1 25		1,171 2 50	2,929 2
17	\$14 00			9	4	2	1	11	5			2,871 2 50	\$5,925

NTY.

25	\$60 00	1		2		1		3		1 75		570 3 50	1,941
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STATISTICS OF

MORGAN

Office number.	Name of company or mine owner	Name of operator	Days worked....	Kind of opening		Depth of shaft.....	Thickness of coal. ... feet.	Kind of power.		How ventilated.
				Shaft	Adit			Steam	Hand	
1	Hubbard & Moore.....	Hubbard & Moore.....	250	1		100	60	1		1

PUTNAM

1	Blackbird Block Coal Co.	C. W. Lane.	161	1			2	8	1		1
2	H. B. & H. Coal Co.....	H. B. & H. Coal Co.	80		1		2	9	1		1
3	Leck, Jno.	O. L. D. Wilson	150	1			2	10			1
4	Mendota Coal Co.	M. C. Co., Mines 2 & 9	108	1	1	67	2	10	1		1 12
5	"	W. F. Yates, lessee No. 8	164	1			2	11	1		1
6	"	Hardy Medlin, " No. 7	128	1			2	5	1		1
7	Newkirk, S. W.	W. S. Newkirk	42		11		4		1		1
8	Price, J. J.	J. J. Price	162	1		110	2	6	1		1
9	Robison, J. D.	J. D. Robison	80		1		10		1		1
10	Rodgers, J.	J. Rodgers	120		1		6		1		1
11	Trent, Wilson.	Wilson Trent	75		1		6		1		1
12	Vincent, James	James Vincent.	55	1			10		1		1
			1,268	3	6	6		3	6	3	6 5 2

RALLS

1	Barger, John	John Barger	80	1			2	4		1	1
2	Fitzpatrick Bros.	Clark Coal Co.	264	1		61	2	3	1		1
3	Keenan, James.	Perry Coal Co.	245	1		55	2	8	1		1
4	Senton, J. F.	Ralls Co. Coal Co.	216	1		55	2	4	1		1
5	Wells, R. & F. Elmer	Salling Coal Co.	20		1		2	2		1	1
			625	3	1	1			3	2	2 3

RANDOLPH

1	Holen-Darnall Coal Co.	H. D. C. Co. Mines 7 & 9	190	1		150	8	10	1		14
			270	1		165			1		14
2	Central Coal & Coke Co.	C. C. & C. Co. No. 5	128		1		4		1		1
8	"	"	128	1			4	8	1		1
4	Coal Creek Coal & M. Co.	C. C. C. & M. Co.	126	1		68	8	10	1		14
5	Eagle Coal & M. Co.	E. C. Coal & M. Co.	146	1		97	3	6	1		14
6	Elliot Coal Co.	Elliot Coal Co.	254	1		127	4		1		12
7	Halre Bros.	G. W. Halre.	120		1		3		1		
8	Hollingsworth Coal Co. (from April 1, 1900).	Hollingsworth C. Co.	120	1		85	4	6	1		14
9	Interstate Mining Co.	Interstate Mining Co.	250	1		110	8	8	1		12
10	Mid State Coal Co. (until April 1, 1900)	Hollingsworth C. Co.	74	1	1	84	4		1		10
11	Mitchell, W. E.	W. E. Mitchell	155	1			4		1		1
12	Pulkington, J. W.	J. W. Pulkington	120	1			4	6		1	1
13	Randolph Co. C. & M. Co.	Randolph Co. C. & M. Co.	40	1		110	8	8	1		14
14	Smith & Glynn	Jno. Glynn	100		1		3	8		1	1
15	Standard Coal Co.	G. Morris	235	1					1		10
16	Vaughan, W. T.	W. T. Vaughan	54		1		4	6		1	1
17	Walsh Coal Co.	Walsh Coal Co., No. 1	200	1			4	2	1		1
18	"	" No. 2	105	1		98	4	1	1		14
19	Williams, L. B.	L. B. Williams	144	1			4	2		1	1
			2,984	14	4	4	1		14	9	8 1 8 11

COAL MINES—Continued.

COUNTY.

Office number.....	Total amount re- ceived for output, 1904.....	Price received per ton at mine.....	Tons of coal mined.	Price paid for mining.		Employees.				Powder.	Mules..	Pillar and room.....	Long-wall.....	
				Summer Winter	Total.	Others		Miners	Cost.....					Kegs.....
						Summer....	Winter ...								Summer ...	Winter .....
.....	20,720	\$1 50	4,200	.....	8	8	3	3	5	5	.....	.....	1

COUNTY.

1				4	2	45	30	11	5	56	35	40	90	11,830	\$2 08	\$22,999	1
1						2		2		2				720	2 12	1,580	2
1						2	1			2	1	1 00	1 00	255	1 09	433	3
1				12	12	300	200	40	40	340	340	1 00	1 00	37,858	1 80	62,076	4
1				1	1	11	9	2	1	13	10	1 00	1 00	8,548	1 35	4,847	5
1				2	2	24	24	8	8	32	27	1 00	1 00	6,772	1 48	10,028	6
1						4				4		1 00		100	1 25	125	7
1				2	2	22	20	6	4	28	24	92	92	5,400	1 95	11,500	8
1						2				2		1 00		100	1 25	125	9
1				1	1	18	10	2	1	20	11	1 00	1 00	8,857	1 65	5,555	10
1						1		1		2		88		125	1 25	146	11
1				1		8		2		5		86		228	1 64	494	12
211				28	30	885	594	69	55	404	340			70,118	\$1 79	\$125,858	

COUNTY.

1						2				2		\$1 50		250	\$2 00	2500	1
1				1	1	12	9	8	2	15	11	1 02	1 02	4,185	1 75	\$7,834	2
1				1	1	18	12	8	2	16	15	1 10	1 02	4,489	1 75	7,854	3
1				2	2	18	18	5	5	23	23	1 02	1 02	7,899	1 75	13,828	4
1						2		1		3		1 02		80	2 00	160	5
4	1			4	4	47	39	12	10	59	49			16,902	\$1 75	\$29,661	

COUNTY.

1	1			17	17	98	87	41	38	137	128	95	95	105,025	\$1 66	\$174,620	1
1		1,059	\$2,118 00	5	5	87	87	19	19	56	56	72	72	17,985	1 50	26,979	2
1		1,059	2,118 00	14	14	75	75	25	25	110	110	72	72	36,871	1 50	54,557	2
1	1	175	350 00	1		20		14		34		95		4,912	1 80	8,842	4
1				4	3	50	30	10	7	60	37	72	72	21,024	1 75	36,792	5
1		8,275	6,550 00	7	7	130	130	20	20	150	150	87	87	80,174	1 37	110,087	6
								4	6	4	6			1,600	1 75	2,800	7
1		2,008	5,216 00	12	12	110	110	45	45	155	155	87	87	68,706	1 45	77,875	8
1	1	550	1,100 00	11	11	125	110	31	31	156	141	101	95	64,071	1 80	115,829	9
1		1,720	3,440 00	15	15	114	114	47	47	161	161	87	87	29,375	1 49	43,764	10
1		80	65 00	1	1	4	2	1	1	5	3	72	72	1,173	2 00	2,346	11
1				2		8	20	8		11	20	87	87	4,000	1 50	6,000	12
1		20	40 00			7		2		9		87	87	700	1 75	1,225	13
1		150	300 00			7	5	2	1	9	6	87	87	2,500	1 75	3,875	14
1		135	270 00	2	2	50	50	14	14	64	64	87	87	24,480	1 39	33,972	15
1		10	17 00			2	2			2	2	1 05	1 05	80	1 50	120	16
1		3,000	6,000 00	9	9	125	125	25	25	150	150	87	87	84,000	1 48	120,120	17
1		1,500	3,000 00	7	7	130	130	25	25	155	155	87	87	45,000	1 48	64,850	18
1		120	240 00	1	1	7	5	1	1	8	6	70	70	2,160	1 75	3,780	19
3	18	15,894	\$30,825 00	103	104	1,048	1,032	330	318	1,437	1,345			578,906	\$1 56	\$857,798	

STATISTICS OF
RAY

Office number	Name of company or mine owner	Name of operator	Days worked.	Kind of opening		Depth of shaft.	Thickness of coal, feet.	Kind of power.		How ventilated.				
				Slope.	Drift.			Water.	Natural.					
1	Atward, Frank	Atward & Son	104	1		180	2	1		1				
2	Calnen Coal Co	Calnen Coal Co.	145	1		100	1	10	1					
3	Campbell, Margaret	C. C. Ballard	180		1					1				
4	Central Coal & Coke Co	W. E. Murlin	179	1		70	1	6	1	1				
5	Chenault, A. R.	C. A. Chenault	120	1		100	4	4		1				
6	Clark, Jacob	Jacob Clark	150	1		40	2	1		1				
7	Crawford-Wilson Coal Co.	C. W. Coal Co.	120	1		110		1		1				
8	Crispin, E. F.	Crispin & Ward	208	1		85		1		1				
9	Deer, J. B.	J. B. Deer	50	1		45		1		1				
10	Fowler Coal & Mng. Co	Fowler C. & M Co	175	1		45	2	1		1				
11	Grant Coal Co	Grant Coal Co.	150	1		90		1		1				
12	Hubbell Coal Co.	Hubbell Coal Co	220	1		115		1		1				
13	Huston, Jos	Jos. Huston	20		1		1	6		1				
14	Kallenberger, J. J.	J. J. Kallenberger	20		1		1	5		1				
15	King, R. A.	John Doran	200		1		1	10		1				
16	Loeven, Theo.	Theo. Loeven	120		1		1	8		1				
17	Loeven, J.	Fred Buchlinger	120		1		1	2		1				
18	Loeven, Jos	Jos. Loeven	120		1		1	2		1				
19	Marshall Heirs, C. B.	James M. Edgar	70		1		1	6		1				
20	Mercantile Coal & M. Co	Mercantile C. & M. Co.	200	1		198	2	1		1				
21	Pence & Calnen	Pence & Calnen	200	1		90	1	10	1					
22	Pence & Hensley	Wm. Hensley	205	1		85	1	10	1					
23	Pickering Coal Co	Pickering C. Co. No. 4	181	1		40	2	1		1				
			219	1		107		1		1				
24	Rankin, A. F.	A. F. Rankin	187		1					1				
		R. & C. C. Co. Nos. 4								1				
25	Richmond A. Camden Coal Co	5, 9, 12 & 11 Richmond R. & C. C. Co., Nos. 1 & 2, Camden	100	5		50	to	1	10	6				
				2		120		1						
26	Rinkenbach, John	John Rinkenbach	250	1		90	2	1		1				
27	Seyler, Chas.	Chas. Seyler	40		1		2	1		1				
28	Washington, S. H.	S. H. Washington	230	1		100	2	1		1				
29	Withers & Lloyd	Hugh Blair	110	1		100		1		5				
			5,124	20	2	7		11	13	9	1	6	17	13

ST CLAIR

1	Cook, Jas	Jas. Cook	40		1		2		1	1
2	Cotton, S. H.	S. H. Cotton	60		1		1	1	1	1
3	Griggs, L. L.	L. C. Collins	150	1		25	1	1	1	1
4	Wooden, H. M.	H. M. Wooden	25		1		1	1	1	1
			275	1	1	2		1	1	1

SCHUYLER

1	Blansett, B. F.	B. F. Blansett
2	Eagle Valley Coal Co	Eagle Valley Coal Co
3	Manufacturers C. & C. Co	M. C. & C. Co., No. 10
4	Mock & Bro	Mock & Huston
5		

VERNON

1	Central Coal & Coke Co.	C. C. & C. Co.	No. 10	220	1	115	5	1	14				
2	"	"	No. 21	220	1	130	8	1	12				
3	"	"	No. 21	150	1	102	5	1	16				
4	Ingram, W.	Mock & Co.		150		3		1					
5	Jones, Phil W.	A. S. Brown		185	1	20	2	4	1				
6	Lowe, J. A.	J. A. Lowe		150	1	3		1	1				
7	Lyons, Philip	J. L. Brown		120		1	8	1	1				
8	McAbister, W. A.	D. K. Perkins		265	1	2	4	1	1				
9	Palmer Mine	J. W. Flake		25			2		1				
10	Radde, F. M.	F. M. Radde		10				1					
				1,447	4	2	4	8	8	4	3	1	3

COAL MINES—Continued.
COUNTY.

Pillar and room. Long-wall.	Powder Kegs	Mules, Summer, Winter.	Employees.				Price paid for mining.		Tons of coal mined.	Price received per ton at mine.	Total amount re- ceived for output, 1904	Office number.
			Miners	Others.	Total		Winter	Summer				
1			10	11	2	19	18	175	2,080	22 50	45,300	1
1			15	10	3	19	12	111	1,900	1 85	3,515	2
1			8	8	3	9	3	1 50	1,200	2 00	2,400	3
1		3 8	75	75	20	95	95	1 11	21,791	2 05	44,714	4
1			8		1	9		1 11	882	2 54	2,118	5
1			4	3		4	2	1 50	400	2 50	1,000	6
1		5 8	40	44	10	90	50	1 11	20,400	1 80	36,720	7
1		1 1	25	12	3	29	13	1 11	5,548	2 50	13,870	8
1			4	2	3	7	8	1 12	465	1 75	814	9
1		2	40		9	49		1 11	9,928	1 75	17,374	10
1			8			8		1 11	1,000	2 00	2,000	11
1		2 12	50	40	8	58	48	1 11	15,935	1 80	28,681	12
1			8	2		8	2	1 50	600	2 00	1,200	13
1					6	6	2	1 75	400	2 50	1,000	14
1			3	2		3	2	1 75	420	2 50	1,050	15
1			7		8	10		1 75	1,180	2 25	2,655	16
1			4	2		4	2	1 75	645	2 25	1,451	17
1			4	8		4	3	1 75	720	2 25	1,620	18
1			6		1	7		2 00	720	2 50	1,800	19
1		1 1	60	60	15	75	75	1 11	28,087	1 75	50,202	20
1		2 2	75	50	7	82	55	1 11	12,000	1 85	22,200	21
1			25	7	4	29	9	1 11	5,000	1 85	9,250	22
1		2 2	18	18	4	22	22	1 11	22,292	2 15	47,906	23
1		4 4	27	27	10	37	27	1 11	8,760	2 00	7,520	24
1		2 2	15	15	2	17	17	1 11	59,829	2 27	131,779	25
1			9	3		9	3	1 11	8,600	2 00	7,280	26
1			5		2	7		1 11	500	2 25	1,125	27
1			10	7	3	13	9	1 11	2,616	2 00	5,232	28
1			8		1	9		1 11	1,540	2 00	3,080	29
2		37 33	785	570	165	950	607		225,485	23 01	5454,705	

COUNTY.

1			1		1	2		\$ 50	\$ 50	80	\$2 00	\$160	1
1			5	2	1	6		1 25	1 25	250	2 00	500	2
1			1		1	2		1 00		900	2 00	1,800	3
2			7	2	7	14	8			99	1 74	178	4
										1,229	\$1 98	\$2,488	

COUNTY.

1		1	4		1	5		\$1 00		625	\$1 75	\$1,094	1
1			8		2	8		1 00		400	2 00	800	2
1		3 2	55	88	11	66	47	91	\$ 91	19,975	1 75	34,781	3
1			4		2	6		1 25		960	1 75	1,680	4
1 3		5 2	66	38	16	82	47			21,800	\$1 75	\$38,365	

COUNTY.

1	2,215	\$4,430 00	6 6	36	96	23	23	59	59	\$ 72	\$ 72	41,890	\$1 50	\$62,814	1
1	4,441	8,882 00	14 14	60	60	32	32	101	101	72	72	68,448	1 50	102,672	2
1	2,848	4,068 00	11 11	48	48	25	25	78	78	62	62	55,742	1 50	83,613	3
1	25	41 00		3		3		6				2,250	1 75	4,000	4
1				4	4	1	1	5	5	1 00	1 00	1,500	1 00	2,400	5
1				4	2	1	1	5	3	1 25	1 25	1,200	2 00	2,400	6
1	2	4 00		2		2		4				600	2 50	1,500	7
1	145	302 00		3	2	2	1	5	3	1 00	1 00	1,750	1 00	2,000	
						3		2				95	2 00	16	
						2		2				21	1 00	8	
6	9,308	\$18,406 00	31 31	109	161	94	68	239	244			178,511	\$1 51	\$269,381	

LIST OF COAL COMPANIES AND OPERATORS
OF SAME.

ADAIR COUNTY.

Companies.	Operators.	Postoffice.
Oak Block Coal Co.....	J. N. Bedford	Stahl.
Lee's Mine	John Lee	Connelsville.
Kirksville Coal & Con. Co....	Kirksville C. and C. Co.....	Kirksville.
K. C. Midland C. & M. Co.:		
No. 1, No. 2.....	K. C. Midland C. and M. Co..	Novinger.
D. C. Scott.....	D. C. Scott.....	Fegley.
Rombauer Coal Co.....	R. G. Rombauer.....	Novinger.
Great Northern Fuel Co.....	Great Northern Fuel Co.....	Novinger.
Paris Mine No. 54.....	John Paris	Connelsville.
Stahl Coal Co.....	Stahl Coal Co.....	Stahl.
Mfg. Coal and Coak Co.....	Manf. Coal & Coak Co.....	Connelsville.

AUDRAIN COUNTY.

Standard Coal and Mining Co..	Standard Coal and M. Co.....	Vandalia.
Vandalia-Farber Coal Co.....	Vandalia Farber Coal Co.....	Farber.
Mississippi Glass Co.....	Mississippi Glass Co.....	St. Louis.
Kreiger Coal Co.....	Jullus Kreiger	Martinsburg.
Hafner, O. F.....	S. C. Clutter.....	Mexico.
Bevan, Wm.	Wm. Bevan	Laddonla.
Audrain Coal Co.....	Audrain Coal Co.....	Vandalia.

BARTON COUNTY.

Wear Coal Co.....	Wear Coal Co.....	Pittsburg, Kansas.
Vendel, Walter	Walter Vendel	Englevale, Kansas.
Western Coal and M. Co. No. 8.	Western Coal and M. Co.....	St. Louis.
Western Coal and M. Co. No. 9.	Hall & Fletcher.....	Minden Mine.
Walser, G. H.....	Walser & Yoke.....	Liberal.
Scherard, Florence	G. W. Goodwin.....	Fuller, Kansas.
Blixen Mine	Short & McKenzie.....	Liberal.
Patterson, W. W.....	W. W. Patterson.....	Pittsburg, Kansas.
Lavery Bros.	Lavery Bros.	Liberal.
Spear, M. M.....	M. M. Spear.....	Lamar.
Travis, Joe	Joe. Travis	Liberal.
Richards, C. A.....	C. A. Richards.....	Liberal.
Curless, W. H.....	Geo. X. Mellor.....	Liberal.
Campbell, Jas.	C. C. Dunham.....	Liberal.

BOONE COUNTY.

Sun R'	J. H. White	Rucker.
Davis,	F. R. Davis.....	Browns Station.
Stidha	W. A. Stedham.....	Harrisburg.
Beasl	John Gossett	Harrisburg.
Whit	Marlon R. White	Clark.
Pray	W. R. Prayther.....	Columbia.
Sutt	W. C. Sutton	Columbia.
Kee	Jas. H. Keen.....	Columbia.
Col	Co..... R. E. Henry.....	Columbia.

BATES COUNTY.

Companies.	Operators.	Postoffice.
Ackerman, J. T.....	J. T. Ackerman.....	Hume.
Amsterdam Coal Co.....	Amsterdam Coal Co.....	Kansas City.
Engles, T. J.....	J. T. Engles.....	Rich Hill.
Ferguson Mine	C. E. Ferguson.....	Rich Hill.
Fleming Coal Co.....	Fleming Coal Co.....	Rich Hill.
Gee, James	Jas. Gee	Rich Hill.
K. & W. Coal and Mining Co..	K. & W. Coal and Mining Co.	Kansas City.
Holland Coal Co.....	Holland Coal Co.....	Rich Hill.
New Home Coal Co.....	New Home Coal Co.....	Rich Hill.
Spencer Bros.	Spencer Bros.	Rich Hill.
Rich Hill C. and M. Co.....	Rich Hill C. and M. Co.....	St. Louis.
Rees Coal Co.....	Rees Coal Co.....	Rich Hill.
Peeler, D. D.....	D. D. Peeler.....	Appleton City.
Lowder, W. H.....	W. H. Lowder.....	Rich Hill.
Tarver & Daly.....	Tarver & Daly.....	Rich Hill.
David McComb	David McComb	Rich Hill.
Pearson & Watson.....	Pearson & Watson	Rich Hill.
Selders Bros.	Selders Bros.	Hume.
Harris, J. A.....	J. A. Harris.....	Hume.
John W. Martin.....	John W. Martin.....	Spence.
Robt. Sutherland	Robt. Sutherland	Montrose.
Danl. Morehouse	Danl. Morehouse	Worland.
D. H. Arbogast	D. H. Arbogast	Foster.

CALDWELL COUNTY.

Caldwell Coal Co.....	Caldwell Coal Co.....	Hamilton.
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CALLAWAY COUNTY.

Fulton Fire Brick Co.....	Fulton Fire Brick Co.....	Fulton.
John Harris	John Harris	Fulton.
Wm. Castle	Wm. Castle	Fulton.
J. F. Reed.....	J. F. Reed.....	Fulton.
John W. Simmons.....	John W. Simmons.....	Fulton.
Jas. Smith	Jas. Smith	Fulton.

CARROLL COUNTY.

Ogle, W. F.....	W. F. Ogle.....	Hale.
Hughes, Wm.	Wm. Hughes	Hale.
Lower, J. F.....	J. F. Lower	Little Compton.
H. D. Anwaretr.....	H. D. Anwaretr.....	Hale.

CASS COUNTY.

Canter & Andrews.....	Canter & Andrews.....	Creighton.
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CEDAR COUNTY.

Schroder, C. M.....	C. M. Schroder.....	Eldorado Springs.
Poague, G. M.....	G. M. Poague.....	Jerico Springs.
J. C. Duncan.....	J. C. Duncan.....	Jerico Springs.

CHARITON COUNTY.

Kahler, W. J.....	W. J. Kahler.....	Newcomer.
Twigg Mine	J. W. Twigg.....	Salisbury.

CLAY COUNTY.

Companies.	Operators.	Postoffice.
Missouri City Coal Co.....	Missouri City Coal Co.....	Missouri City.

COLE COUNTY.

Elston, Geo.	Geo. Elston	Elston.
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COOPER COUNTY.

Hazel Springs Coal Co.....	Chas. W. Hazel.....	Boonville.
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DADE COUNTY.

McCluey Mine	R. M. McCluey	Sylvania.
Finney Mine	Finney & Taylor.....	Sylvania.

GRUNDY COUNTY.

Grundy County Coal Co.....	Grundy County Coal Co.....	Trenton.
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HENRY COUNTY.

Bowen Bros.	Bowen Bros.	Windsor.
Coon Creek Coal Co.....	Coon Creek Coal Co.....	Clinton.
Cooper Creek Coal Co.....	Cooper Creek Coal Co.....	Brownington.
Demaree, H. T.....	H. T. Demaree	Deepwater.
Dickey-Clay Mfg. Co.....	W. S. Dickey Clay Mfg. Co...	Deepwater.
Engleman, Chas.	Wm. Zimmerman	Montrose.
Payton & Kennedy.....	Payton & Kennedy.....	Deepwater.
Hughes, W. E.....	W. E. Hughes	Windsor.
Hurst Coal Co.....	John Hurst	Deepwater.
Jordan Coal and Coak Co.....	Jordan Coal and Coak Co.....	Clinton.
Lewis Coal Co.....	D. B. Pligg.....	Lewis Station.
Rees, Wm.	Wm. Rees	Deepwater.
Rusk Mine	Edward Robinson	Deepwater.
Wilson, Thomas P.....	Thomas P. Wilson.....	Montrose.

JACKSON COUNTY.

Brush Creek Coal and M. Co.,	Brush Creek Coal and M. Co.,	Kansas City.
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JOHNSON COUNTY.

Neily, M. B.....	M. B. Neily.....	Warrensburg.
Markward, Isaac	D. O. Bullock.....	Warrensburg.
Christopher Coal Mine.....	J. H. Christopher.....	Warrensburg.
Caggell, J. C.....	J. C. Caggell.....	Montserratt.

HOWARD COUNTY.

Morrison Mine	R. S. Jackson.....	Fayette.
Hamilton & Grant Coal Co.....	Hamilton & Grant Coal Co.....	Wair City, Kansas.

LAFAYETTE COUNTY.

Companies.	Operators.	Postoffice.
Bell & Green.....	W. N. Green.....	Lexington.
Bonanza Coal Co.....	S. W. & J. B. Brandan.....	Higginsville.
Bartels Mine	Martin Bartels	Concordia.
Cary, B. F.....	B. F. Cary.....	Kansas City.
Chamberlin Mine	N. F. Wilson.....	Odessa.
Consolidated Farmers Coal Co.	Con. F. C. Co.....	Higginsville.
Diamond Coal Co.....	Diamond Coal Co.....	Corder.
Dover Coal Co.....	Dover Coal Co.....	Lexington.
Hoffman Mine	E. J. Hoffman.....	Higginsville.
Hohenwald Bros.....	Hohenwald Bros.	Corder.
Corder Coal Co.....	G. W. Kierstead.....	Higginsville.
Labor Exchange C. M. Asso- ciation, Branch 305.....	Labor Exc. C. and M. Co.....	Wellington.
Lanling-Harris Coal Co.....	Lanling-Harris Coal Co.....	Wellington.
Independence Coal Co.....	Independence Coal Co.....	Independence.
Farmers' Coal Co.....	Farmers' Coal Co.....	Kansas City.
Spring Lake Coal Co.....	J. A. Edmonds, Sr., & Co.....	Lexington.
Looney, J. H.....	Frank George	Higginsville.
Macey Coal Mine.....	E. Macey Van Gulder.....	Kansas City.
McGrew, J. C.....	J. C. McGrew.....	Lexington.
Silver Creek Coal Co.....	Opie & Mitchell.....	Waverly.
Plattensburg & Co.....	Sipe & Gaffin	Lexington.
Plattensburg & Co.....	Stranke & Atwood.....	Lexington.
Rosewell, Jas.	Jas. Rosewell	Lexington.
Schoaling, S. A.....	Will Noah	Higginsville.
Waverly Coal Co.....	Waverly Coal Co.....	Waverly.
Western Coal and M. Co.....	Western Coal and M. Co.....	Lexington.
Kresse, A. F.....	A. F. Kresse	Concordia.
Blackburn Coal Co.....	F. Stocks	Blackburn.
Walton, Thos.	Thos. Walton	Lexington.
Kratz & Son.....	Kratz and Son.....	Higginsville.
Summers, M. W.....	M. W. Summers.....	Alma.
Parry, Thos.	Thos. Perry	Odessa.
Gersenderfer, S. F.....	S. F. Gersenderfer.....	Corder.

LINN COUNTY.

Marcelline Fuel Co.....	Marcelline Fuel Co.....	Marcelline.
Brookfield Paving Brick Co....	Brookfield P. B. Co.....	Brookfield.
Burdall & Johnson.....	Burdall & Johnson.....	Brookfield.
Landrith Coal Co.....	Landrith Coal Co.....	Marcelline.
Marcelline Coal Co.....	Marcelline Coal Co.....	Marcelline.
Rowell, H. J.....	H. J. Rowell.....	Brookfield.
Williamson, L. R.....	L. R. Williamson.....	Brookfield.
Wine, H. C.....	H. C. Wine.....	Brookfield.

LIVINGSTON COUNTY.

Garlic, C. W.....	J. E. Dusenbury.....	Mooresville.
Cox, J. C.....	W. L. Cox & Bro.....	Chillicothe.

MACON COUNTY.

Bevier Coal and M. Co.....	Bevier Coal & M. Co.....	Bevier.
Central Coal and Coke Co.....	Central Coal and Coak Co....	Bevier.
Dennis, J. H.....	J. H. Dennis	Macon.
Garnett, Frank	Frank Garnett	Macon.
Holtzelaw & Hurd.....	Hultzelaw & Hurd.....	Macon.
James, Mrs. Levi.....	James Bros.	Bevier.
Helmet Mining Co.....	Helmet Mining Co.....	Lingo.
Northwestern C. and M. Co....	Northwestern C. and M. Co....	Bevier.
Thomas Rowland	Rowland, Thomas	Bevier.
Wilsie, Geo.	Geo. Wilsie.....	Callao.
Winkler, B. F.....	B. F. Winkler.....	Macon.

MONITEAU COUNTY.

Companies.	Operators.	Postoffice.
Keller, Chas. B.....	Chas. B. Keller.....	Tipton.

MONROE COUNTY.

Redding, A.	A. Redding	Paris.
Montgomery, W. J.....	W. J. Montgomery.....	Paris.

MONTGOMERY COUNTY.

Whitehead Coal Co.....	Whitehead & Sons	Wellsville.
Hays, F.	E. Hays	Wellsville.

MORGAN COUNTY.

Hubbard & Moore.....	Hubbard & Moore.....	Varsallies.
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PUTNAM COUNTY.

H. B. & H. Coal Co.....	H. B. & H. Coal Co.....	Mapleton.
Blackbird Coal Co.....	C. W. Lane.....	Centerville, Iowa.
Mendota Coal and M. Co.....	Mendota Coal and M. Co.....	Mendota.
Newkirk, W. S.....	W. S. Newkirk.....	Rosewood.
Rodgers, J.	J. Rodgers	Mendota.
Robinson, J. D.....	J. D. Robinson.....	Unionville.
Price, J. J.....	J. J. Price.....	Unionville.
Leck, John	O. L. D. Wilson.....	Mendota.
Vincent, Jas.	Jas. Vincent	Mendota.
Trent, Wilson	Wilson Trent	Rosewood.

RALLS COUNTY.

Ralls County Coal Co.....	J. T. Seaton.....	Perry.
Fitzpatrick Bros.	Fitzpatrick Bros.	Perry.
Keenan, Jas.	Jas. Keenan	Perry.
Barger, John	John Barger	Perry.
Wells, R., & F. Elmer.....	R. & F. Elmer Wells.....	Centre.

RANDOLPH COUNTY.

Standard Coal Co.....	Standard Coal Co.....	Kansas City.
Wabash Coal Co.....	Wabash Coal Co.....	Huntsville.
Hammett, A. R.....	W. E. Mitchell.....	Huntsville.
Hollingsworth Coal Co.....	Hollingsworth Coal Co.....	Huntsville.
Interstate Mining Co.....	Interstate Mining Co.....	Higbee.
Haire Bros.	G. W. Haire.....	Higbee.
Eagle Mercantile Co.....	Eagle Mercantile Co.....	Moberly.
Elliott Coal Co.....	Elliott Coal Co.....	Elliott.
Coal Creek Coal Co.....	Coal Creek Coal Co.....	Yates.
Central Coal and Coak Co.....	Central Coal and Coak Co.....	Kimberly.
Bolen-Darnell Coal Co.....	Bolen-Darnell Coal Co.....	Kansas City.
Smith & Given.....	John Cronan	Moberly.
Randolph Co. Coal and M. Co.	Randolph Co. Coal and M. Co..	Higbee.
Williams, L. B.....	L. B. Williams.....	Moberly.
McCullough, J. L.....	J. L. McCullough.....	Moberly.
Pilkington, John W.....	J. W. Pilkington.....	Moberly.
Atkinson & Kasey Mine.....	Namme	Moberly.
Vaughan, W. T.....	Vaughan.....	Kimberly.
True's Mine	True.....	Moberly.
Coal Co.	& Allen.....	Moberly.
	Edwards	Huntsville.

RAY COUNTY.

Calnen Coal Co.....	Calnen Coal Co.....	Richmond.
Campbell, Margaret	C. C. Ballard	Hardin.
Central Coal and Coak Co.....	W. E. Murlin	Fleming.
Chenault, A. R.....	C. A. Chenault	Richmond.
Clark, Jacob	Jacob Clark	Hardin.
Crawford & Wilson Coal Co...	Crawford & Wilson Coal Co...	Richmond.
Crispin, E. E.....	Crispin & Ward.....	Richmond.
Dear, J. B.....	J. B. Dear.....	Richmond.
Fowler Coak and M. Co.....	Fowler Coak and M. Co.....	Richmond.
Keyes, Pres, J.....	Gant Coal Co.....	Richmond.
Hubbell Coal Co.....	Hubbell Coal Co.....	Richmond.
Huston, Jas.	Jas. Huston	Norborne.
Mercantile Coal and M. Co.....	Mercantile Coal and M. Co.....	St. Joseph.
Sevier Mine	Chas. Sevier	Richmond.
Pence & Calnen.....	Pence & Calnen.....	Richmond.
Pence & Hensley.....	Wm. Hensley	Camden.
Pickering Coal Co.....	Pickering Coal Co.....	Richmond.
Rankin, A. F.....	A. F. Rankin.....	Richmond.
Richmond & Camden Coal Co..	Richmond & Camden Coal Co..	Richmond.
Washington, S. H.....	Washington & Co.....	Richmond.
Withers & Linville.....	Hugh Blair	Polo.
Atwarb, Frank	Atwarb & Son.....	Richmond.
Loeven, Joseph	Jas. Loeven	Hardin.
Gowen, Theodore	Theodore Gowen	Hardin.
Kallenberger, J. J.....	J. J. Kallenberger.....	Hardin.
King, R. A.....	John Doran	Hardin.
Marshall Mine	Jas. M. Edgar.....	Norborne.
Loeven, I.	Fred Bucklinger	Norborne.

ST. CLAIR COUNTY.

Bever Henry	Robt. A. Mason.....	Appleton City.
Wooden, H. M.....	H. M. Wooden.....	Rockville.
Griggs, L. L.....	L. L. Griggs.....	Lowry City.
Cook, Jas.	Jas. Cook	Appleton City.

SCHUYLER COUNTY.

Manufacturers' C. and C. Co...	Manufacturers' C. and C. Co..	Connelsville.
Eagle Valley Coal Co.....	Eagle Valley Coal Co.....	Queen City.
Golston, Ira	Ira Golston	Queen City.
Blansett, B. F.....	B. F. Blansett	Coatsville.
Mock & Bro.....	Mock & Houston.....	Coatsville.

VERNON COUNTY.

Central Coal and Coak Co.....	Central Coak and Coal Co.....	Kansas City.
Jones, Phil. W.....	A. S. Brown.....	Moundville.
Palmer Mine	J. W. Flake	Shell City.
Ingram, N.	Meek & Co.....	Rich Hill.
Lyons, Phil.	J. L. Brown.....	Walker.
Lowe, J. A.....	J. A. Lowe.....	Sheldon.
McAllister, W. A.....	D. R. Perkins	Moundville.
Raddle, F. M.....	F. M. Raddle.....	Harwood.
Mann, Morris	Morris Mann	Walker.



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